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THE SPHERE, JANUARY 22, 1944
With which is incorporated "BLACK & WHITE" 1/6

THE SPHERE

Vol. CLXXVI No. 2296 WITH WHICH IS INCORPORATED THE GRAPHIC JAN. 22 1944

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A WAR NEWSLETTER —No. 229

1, NEW OXFORD STREET, W.C.1.

"Væ Victis!"—The prospects before the war leaders on the beaten side are doleful. If one side doesn't execute them, the other side will. Whether or no Ciano was once on *our* "little list," I do not know. Hate being a permanent war fashion, it is easy to say that Ciano is better dead. He spoke and acted bitterly enough against the Allies before he "repented." So little time ago he was quite one of the bright young things on the then winning side—he and Ribbentrop. Bitter personal rivals, veiling their mutual hatred and distrust, they redrew the map of Europe and issued their joint declarations and decisions. I wonder what Ribbentrop thought of the killings of Mussolini's traitors. So often in human life an inconvenient rival is removed just too late. The inconvenience has vanished, the mood is passed. He had ceased to be in the way. However, Ciano is dead by all accounts, and Musso. has widowed his beloved daughter. And "the will to win" is stronger than ever among the leaders in the Thieves' Kitchen, because, whichever way they look, the axe, the dagger, or the firing squad blocks their way of escape. In the piping days of peace, when our stomachs were queasy, we could hardly bear to read of the injustices and barbarities of the dark and middle ages. We who live in 1944 (not 1344 or 1544) are contriving to turn those pages by contrast into records of enlightenment. We must expect that our grandchildren will, in their survey of European history, put a later period to the end of the dark ages, and will compare some of the pronouncements of sober judges and reverend divines in 1944 with those of their predecessors of the former dark ages—not to the credit of the twentieth century.

"A Time for Greatness."

—Mr. Roosevelt, from his sickroom, lashed at the noisy political minority which, obsessed with the strategy of party domestic politics, blocks the grand strategy of the war against Hitler and Japan. He declared that the time had come (and was past) for America to mobilise to the last man for total war. And, indeed, he is in the right of it. If it seems so to a very American-minded President of the United States, it is not surprising that it should seem so to the Allies of America. Those who correspond with American friends have evidence enough that that noisy minority is in a very small minority. The partial mobilisation of America has produced already the mightiest contribution to the winning of the war; only total mobilisation can end the war in time to save what remains of civilisation from total collapse. Mr. Roosevelt sees that clearly enough. The domestic constitution and politics of all countries among the Allies are their own affair, sacred, not to be criticised. We know all too well that Democracy has many definitions, and none very clear or satisfactory. But character and politics are not one and indivisible, and there are higher loyalties than to a political party. There is loyalty to country and to allies in war. Democracy is on trial, like totalitarianism; and preoccupation to-day with party stratagems in any country under any system of government is sheer, cynical betrayal of the millions of young men who are dying that decency and freedom may live.

An Argument for Restraint.

—When the reformers begin to blow up their trumpets in the New Moon of Victory, there will be many (it is reasonable to suppose) who will cry out against procrastination and bitterly condemn the slightest delays or deliberations before sweeping measures of reform are passed into law. These trumpeters will regard Britain as an antiquated, tradition-ridden old country, sick for reformation and rationalisation, and likely to expire if the cure be deferred for even a month more. This will be the premise of quite a number of reformers, whether it be a political expedient or sincerely based. It behoves all reasonable men, therefore, to turn back the pages of history and judge whether or no the premise will bear examination. A very brief examination will show them that, in the memory of men still middle-aged, the Greatest of all Reformers has been at work nonstop with his axe, and that his name is not Tub-thumper, but Economic Necessity. Some of us are old enough clearly to remember the ultimate aims of the Fabians of the early Edwardian era. More of us have (more recent) memories of a social and political structure which could reasonably be branded as privilege, capitalism, anachronism and outworn tradition, a structure built up on power politics, party stratagem, class barriers and oligarchy. Which of us, looking coolly back, could deny that to-day the wildest dreams of these Fabians are already in the bag, that almost all the visible barnacles have been scraped from the hull of the old ship, that Fabianism of the 1900's looks to-day like the pale aspirations of polite Toryism, and that there is no Reformer in the field who can compare in efficiency or persuasiveness with Economic Necessity? In the thirty years of our mature memory, a new world has arisen; the old world, which changed so little by comparison between 1832 and 1914, has vanished, and one by one the barriers and chief causes of bitterness, the weapons of every radical reformer, have fallen and been snatched away, not by the persuasiveness of orators, but by the inexorable dictatorship of economic stringency.

Electricity and Public Ownership.

—The experience of dwellers in my rural area of Southern England would not decide us to subscribe to the memorandum of the Association of Electric Power Companies to the Minister of Fuel, in its firm opposition to public ownership. I am not generally in favour of State control, but I should say that in the matter of electricity and water the backwoodsmen of Southern England at least would rally to a man (and woman) under the banner of State ownership. Our experiences of private utility undertakings have not been such as to induce us to agree that public corporations might serve us less well or that fifty years' notice is not too much to ask before retained companies revert by purchase to a public authority. All too many of us remain to-day in the primitive state of our eighteenth-century ancestors. All too many of us have rejected with rage the impudent and contemptuous offers of electricity supplies made us from time to time, on terms which could only presume refusal, by private companies whose first concern is private profit. Lacking all the amenities and services regarded in civilised states as essential to health and decency, we pay the rates which produce some of these benefits in more populous areas for the favoured who live in them, and we appreciate the motives which decide private companies having a monopoly of some of them to deny them to ourselves. But we do not appreciate the principle or the practice of the principle, and we do not want another half-century of experiences so bitter.

THE COMMANDER-IN-CHIEF OF RUSSIA'S NORTHERN FLEET MEETS THE BRITISH HOME FLEET. Shortly before the successful action by the Royal Navy against the German battleship "Scharnhorst," Admiral Sir Bruce Fraser visited Soviet waters in his Flagship, the "Duke of York." He there met Vice-Admiral Golovko: the latter, with some of his staff, attended a concert aboard the British battleship, during the course of which the above picture was taken. From left to right here are seen: Captain Rigerman, Senior Liaison Officer; Vice-Admiral Golovko; Lieutenant Higgins, Interpreter; and Admiral Sir Bruce Fraser

End of the Shooting Season.

—Not so long ago, February 1 was a sad anniversary to many a keen sportsman in England, and from America also, who had since August 12 expended perhaps 10,000 cartridges in a favourite sport. For six months their guns would lie up in oil or gather dust on the shelves of London gun-makers. The day has less significance to-day. The sportsman who is lucky looks back on "a very occasional Saturday"; the luckiest has perhaps spread the thin jam of 400 cartridges (gathered in driblets) over his "season." In 1910, and even in 1930, he sometimes burned as many in a single morning in early September on the moors! Yet the anniversary is not without regrets and happy memories—and a very salutary lesson. Enough is as good as a feast. Over-eating causes indigestion; over-drinking headaches! The hecatombs were a mistake; seven-course dinners a weariness of the flesh. Four hours is quite enough time to spend out shooting; half-an-hour on a dinner of ceremony. A man may get as much fun out of 25 shots as out of 250, and fewer headaches; and as much nourishment for mind and body out of a two-course dinner of herbs as out of an alderman's banquet, with less risk of a sleepless night. With restraint, there is no good reason why shooting should not remain a natural sport and recreation. With the exercise of common sense, we may again entertain our friends "royally"—if only we can avoid the vulgarities of social competition and the follies of elaboration and luxuries and showmanship.

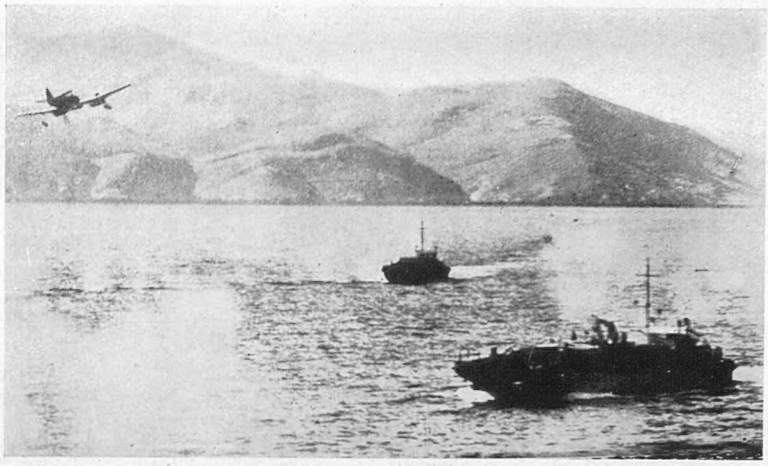
The Labourers in the Vineyard.

—Of all the parables in the New Testament, that of the Labourers in the Vineyard is of most constant application in human life, and bristles with difficulties and even doubts for "masters" and "men." No one can have foreseen (though experience was available) all the bitterness and sense of injury which the graceful decision to honour our fighting men with a 1939-43 Star would cause, and has already caused. Experience has shown that all awards and decorations in the course of a war (other than immediate awards for outstanding gallantry in the field) create as much trouble and irritation as satisfaction. It is natural enough. There *are* the seeds of injustice in the Parable of the Labourers, and human nature does not change. You cannot define good service in mathematical periods of time or geographical areas, and you had far better not try. This war has produced a quite new difficulty. It has been the first of the "people's wars." The civilian has been in the front line. That is one more cause of the embarrassment which results from the bestowal of complimentary awards for good service in the course of war. No amount of selection or infinite pains can be successful where many millions of people have tried to do their duty under conditions of great stress and danger. For the purest and most selective methods must have the appearance of a "lucky dip." It is too much to expect the miracle of the five barley loaves; and in short, it puts too heavy a strain on the fountain of honour. It is in human nature, I suppose, that "patriotism is not enough."

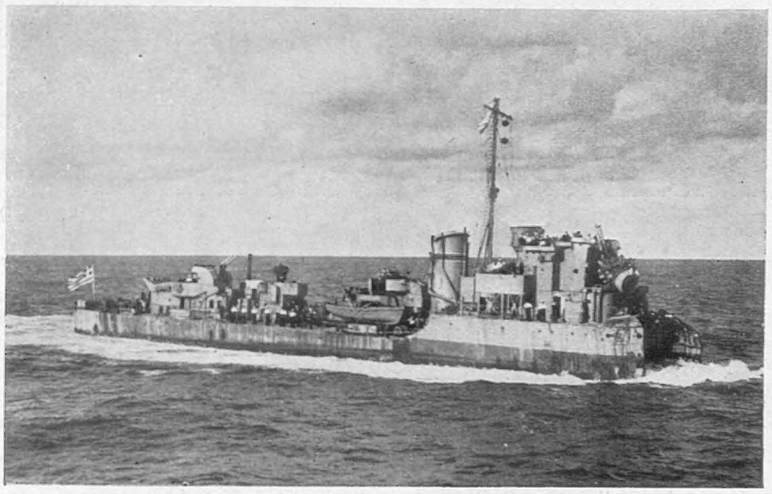
THE OLD STAGER

THE LATEST WAR PICTURES

From Many European Battlefronts—by Land, Sea and Air



THE WAR BY AIR IN THE DODECANESE GROUP: R.A.F. planes bombing enemy shipping amongst the islands. Although we have abandoned Cos, Leros and Samos in the Eastern Mediterranean and withdrawn our troops, we have in no way abandoned control of this area. Our ships and our aircraft are continually harassing the enemy and intercepting his supplies and reinforcements to the islands. This picture was taken during the initial stages of an attack by R.A.F. Beaufighters on two German F-boats south of Kalino, one of the Dodecanese group: two bombs can actually be seen leaving the racks of one of the attacking aircraft

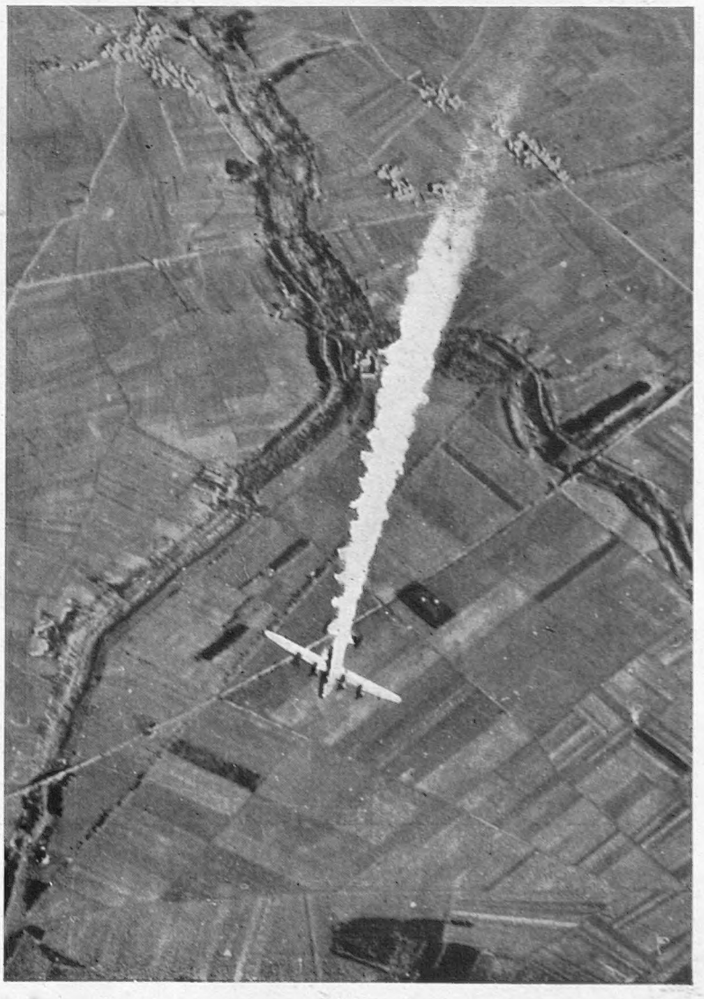


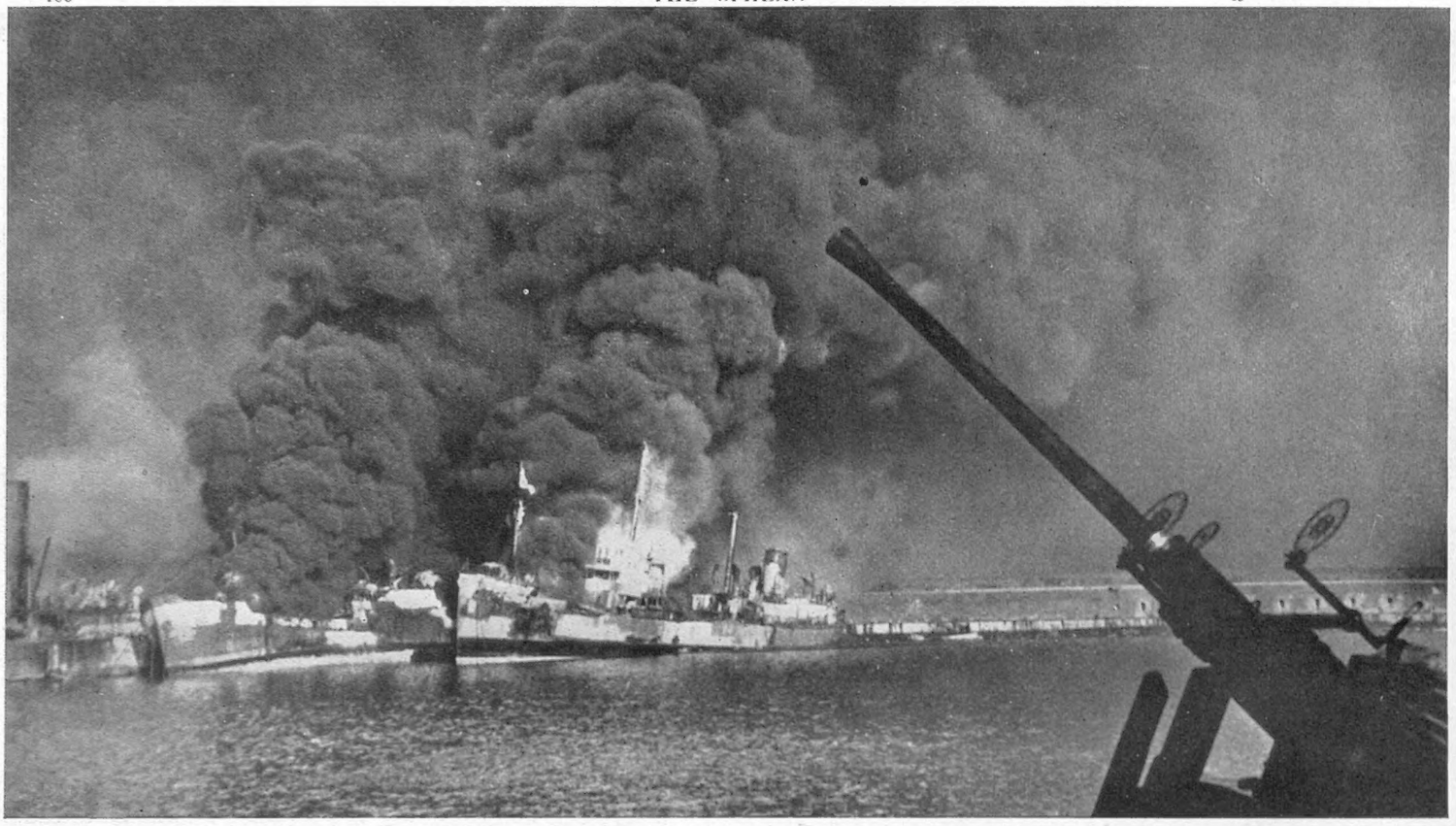
HALF A DESTROYER SAILS HOME THROUGH THE MEDITERRANEAN and makes port safely. This picture shows the arrival back in port of the Greek destroyer *Adrias* (which was formerly the Hunt class destroyer *Border*) after she had had her bows blown off by a mine in the Ægean. She came in under her own steam at a speed of eight knots, having travelled in this condition over 500 miles through dangerous waters. This remarkable performance is a tribute to British warship design and to the men who build such sturdy vessels!

HOW THE TOWN OF ORTONA WAS "MOPPED UP." Men of a Western Canadian Infantry Regiment are here seen stalking Nazis after the capture of the town: they are advancing cautiously through the streets and making a house-to-house clearance amongst the remaining enemy strong-points

On right—**WITH HER MISSION FULFILLED, a stricken Liberator comes to earth over Germany.** Bombing through clouds, Eighth Air Force Liberators and Fortresses have been hitting hard at Germany during recent days. On the occasion when this picture was taken, in addition to bombing the target, the American aircraft also shot down forty German planes, the bombers themselves accounting for thirty-three. This Liberator had dropped her bomb-load on an important target in South-West Germany when she was herself hit whilst fighting her way back through skies filled with enemy fighters and flak

THE END OF A FORTRESS OVER OCHERSLEBEN during the great daylight raids carried out by the Americans on January 11: The big four-engined aircraft had already been hit when this picture was taken and was going down in flames after the successful bombing of the great Focke-Wulf factory at Ochersleben. But, even as it was diving earthwards, one of the F.W. 190's defending the plant continued to attack viciously. In all, some sixty American aircraft were lost on January 11, but not before they had claimed a prodigious number of German fighters as their victims (See *also page* 105 *of this issue*)





WHAT HAPPENED AT BARI?

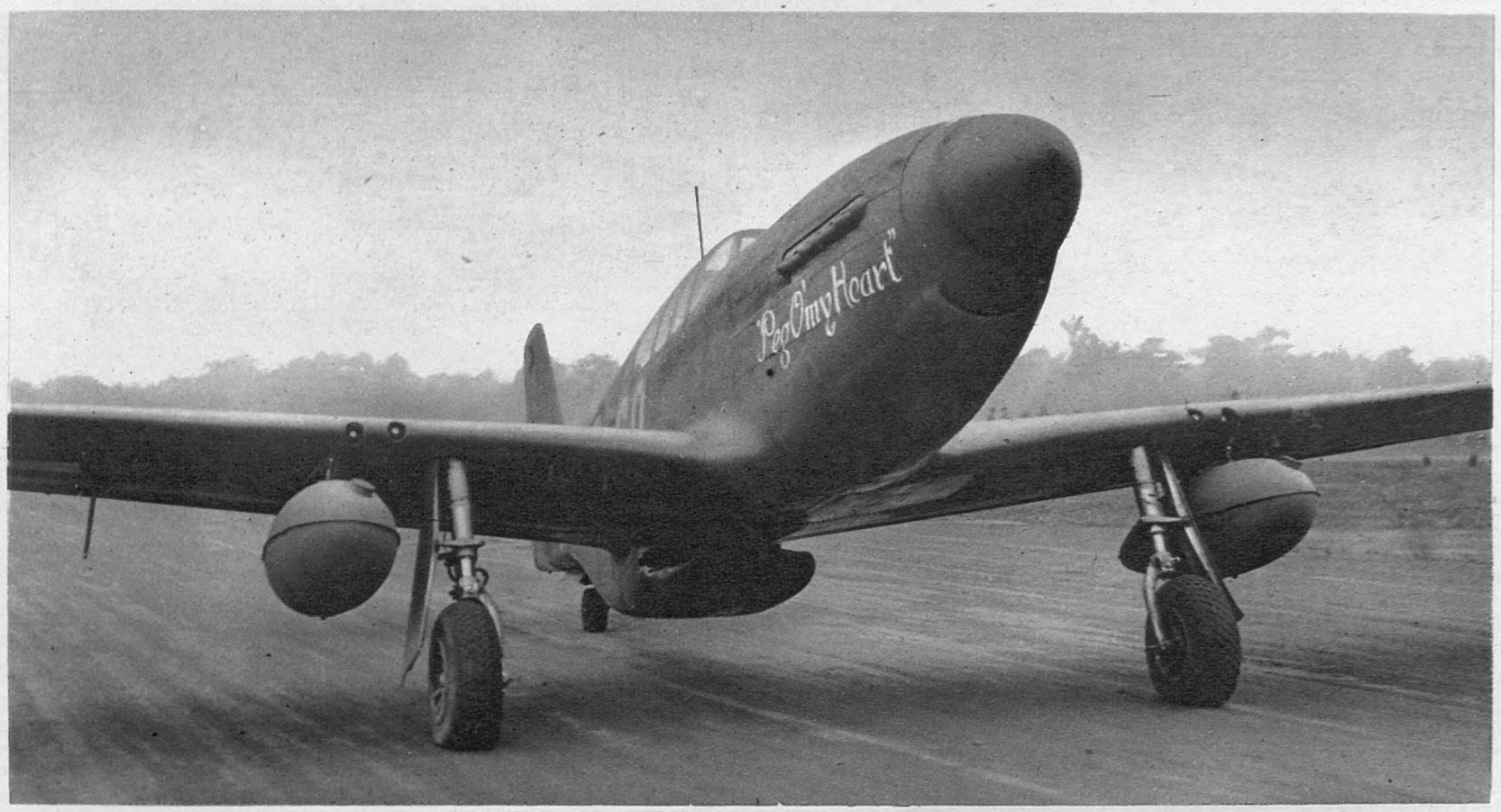
On December 2 when the "Luftwaffe" were Stated to Have Sunk Seventeen Allied Ships

The picture reproduced above was taken just after a raid by German bombers on the port of Bari, in Southern Italy It shows cargo-vessels of the Allies at their moorings blazing fiercely after an attack by the *Luftwaffe* on December 2. It was not until a fortnight later that the first reports of the raid were confirmed by Mr. Stimson, U.S. Secretary of War, in Washington. It is now stated that the defence of Bari was an American air responsibility—hence British reticence in the affair—and that the *Luftwaffe* was "virtually unopposed." According to Mr. Stimson, there were 1,100 casualties amongst the Allied forces, and five American ships were destroyed: Press reports "from unnamed official sources," however, have stated that seventeen Allied ships were sank. Two ammunition-ships were amongst those hit, and the explosions caused damage and destruction to other shipping. Supplies to the Eighth Army were held up in consequence. Between thirty-five and forty bombers took part in the attack, and they were unopposed because the Allies had scarcely any air cover at that time. Ever since the Eighth Army advanced up the east coast of Italy, Bari has served it as an important supply base: the town is also the home of King Victor Emmanuel and the Badoglio Government. Questions have been asked in the House of Commons concerning this incident

THE AMERICANS CLOSE IN

And Bombard Japanese "Home Territory" from the Air in the Far East

The U.S. Air Forces are getting closer and closer to Japan: not content with their successes in the islands of the South Pacific, they are now hitting at the enemy's "home territory." The island of Formosa was raided by heavy bombers of the 14th Army Air Force recently, and considerable damage was done. This Force is the one commanded by Lt.-General Stilwell, with bases in China. The target on this occasion was the Shinshiku air base, which is situated some 125 miles from Foochow. In the picture above, Japanese bombers, caught on the ground, are seen going up in smoke after a low-level attack by the American fighter planes which came in on the island before the Fortresses and Liberators



TWO VIEWS OF THE NEW AMERICAN FIGHTER PLANE—THE P 51 B, AN IMPROVED VERSION OF THE MUSTANG. This aircraft, whose existence was revealed after the great American daylight raids on Germany on January 11, has been described as the longest-range, single-engined fighter in the world, and one of the fastest. It has been built in the United States, but is powered by a Rolls-Royce Merlin engine

A NEW AMERICAN FIGHTER PLANE

The P 51 B, or Improved Mustang

And Pictures of the New American Carriers and M.T.Bs.

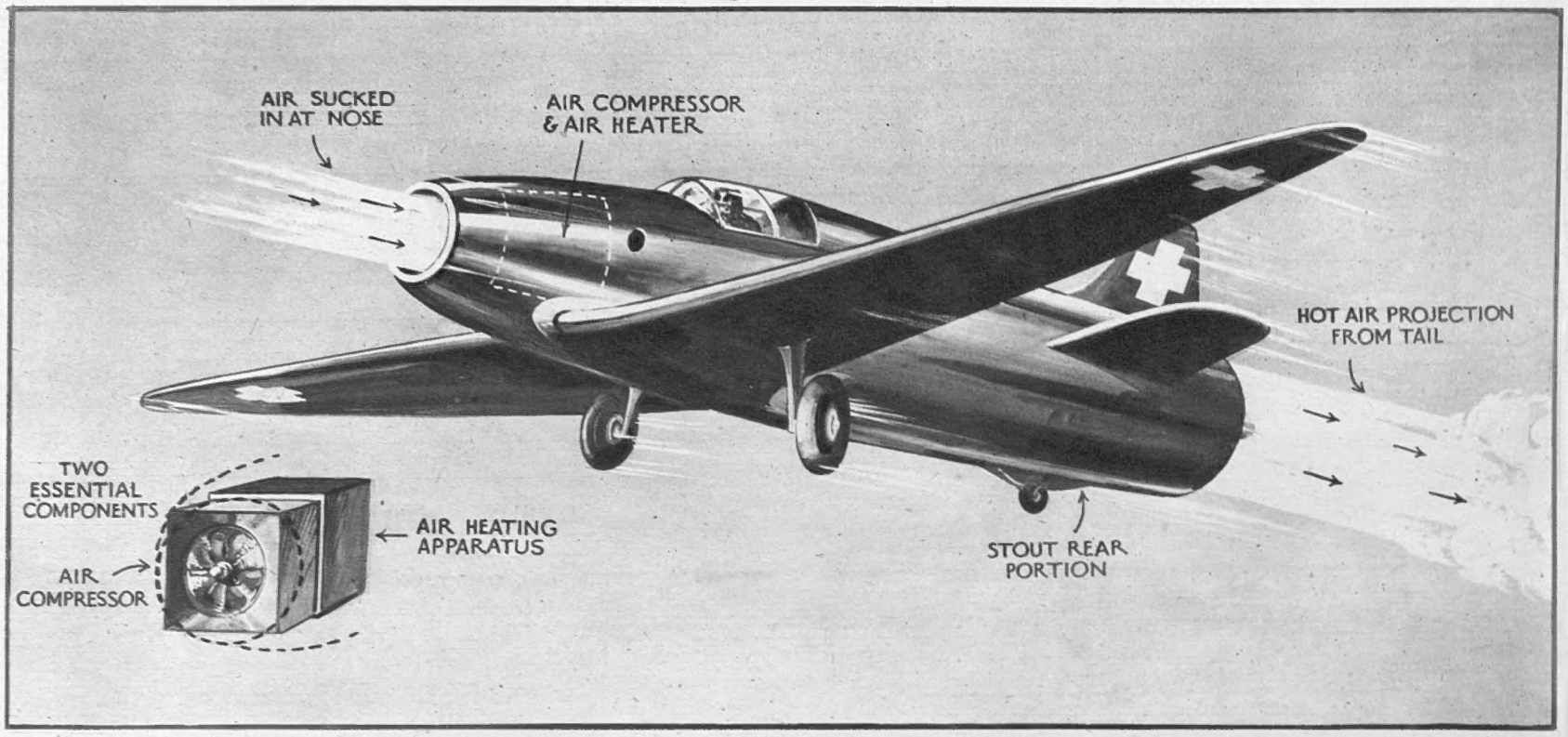
Both these views of the improved Mustang show the auxiliary wing tanks which increase its range as a high-altitude fighter. The propeller is four-bladed, and the undercarriage retracts inwards

After the great daylight raids on Germany on January 11, it was revealed that a new single-engined fighter-plane is now on escort duty with the American "heavies." This is the P51B, or improved Mustang, of which two pictures are given above. It participated in the biggest air battles of the war on January 11, when 152 German fighters were destroyed. The P51B is a long-range aircraft—probably the longest-ranged fighter in the world—and amongst the fastest. Whereas the Mustang has an American Allison engine, the new version has a British Merlin engine: it is also equipped with auxiliary petrol tanks under each wing which can be jettisoned at will when the petrol has been consumed. An added advantage of its design is that two 500-lb. bombs can be substituted in place of the auxiliary tanks, so that it can be used when necessary as a fast low-level bomber. Once its bombs have been released it can then operate as a fighter up to heights of nearly 30,000 ft. Its designer is a former member of the technical staff of the Austrian Air Force now working in America: its builder is a Yorkshireman, now chief production engineer of the North American Aircraft Corporation, which he joined in 1930

A NEW MOTOR TORPEDO-BOAT FOR BRITAIN AND RUSSIA. This is one of the Vosper M.T.B.s now being built in the United States for use in Europe. These vessels are the counterpart of the American Navy's P.T. torpedo-boats: the hull design has been adapted to withstand the short, choppy seas met with in the English Channel and in Russian coastal waters. Two torpedo-tubes are mounted on each side of the craft, with depth-charges and a pair of .50-calibre machine-guns in a power-turret on the after-deck

THE NEWEST CARRIERS OF THE U.S. NAVY HEAD FOR ACTION: Strung out along the horizon, the ships of a Carrier "Task Force" steam for Wake Island in the Pacific. Two of the new Essex class of Carriers are included in the picture

This is the first picture to be released of the American Navy's most modern and hard-hitting Carriers on a combat mission. They are vessels of the 25,000-ton Essex class, which have been acting as the spearhead of the Task Forces operating against the Jap outposts from Wake Island to Rabaul. Starting with a blow at Marcus Island on September 1, 1943, they have followed up this initial attack with others directed against Wake Island on October 5-6; Rabaul on November 5 and 11; Makin and Tarawa on November 20; and then against the Marshalls and Nauru. Operating within range of land-based Jap planes, the carrier-borne Dauntless dive-bombers and Avenger torpedo-planes have pounded enemy shipping and shore installations. Affording cover for the bombers, Grumman Hellcats have shot scores of enemy planes from the sky when the latter attempted to interfere with the American planes during their bombing operations



HOW THE FIRST JET-PROPELLED AIRCRAFT WAS CONSTRUCTED: This was the Caproni-Campini C.C.I., whose first flights were made in August 1940, and which later flew from Taliedo Aerodrome to Rome—168 miles—in two and a quarter hours. The details of its construction are shown here, and actual photographs are given below—*Drawing by E. G. Lambert*

FLYING WITHOUT A PROPELLER

The New British "JET PLANE" and its Italian Predecessor

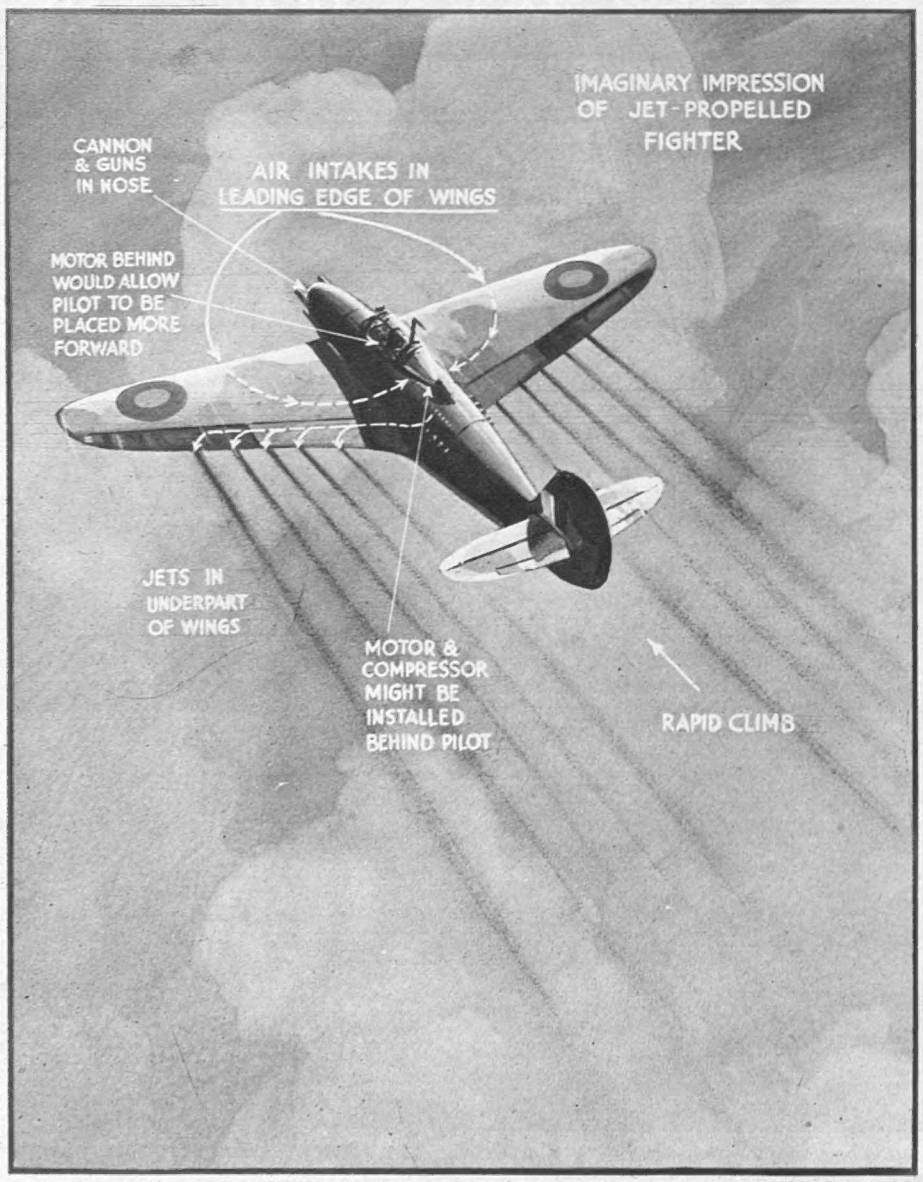
Two New "Inventions" by the Germans—the Rocket Bomb at Sea, and the Towed Bomb

—*Special Sphere Drawings*

A remarkable step forward in aeroplane design was announced a few days ago, in a joint statement by the R.A.F. and the U.S. Army Air Force, which acquainted the general public with the present position with regard to "jet propulsion." As a result of experiments carried out over a period of five years, Britain now has an entirely new type of fighter aeroplane actually flying: it has no propeller, is without the conventional internal-combustion engine and is operated solely by the action of the air. It bids fair to outstrip all other types in performance—notably in speed and climb—hundreds of successful flights have been made by many pilots, here and in the United States, and no mishaps had occurred on any of them.

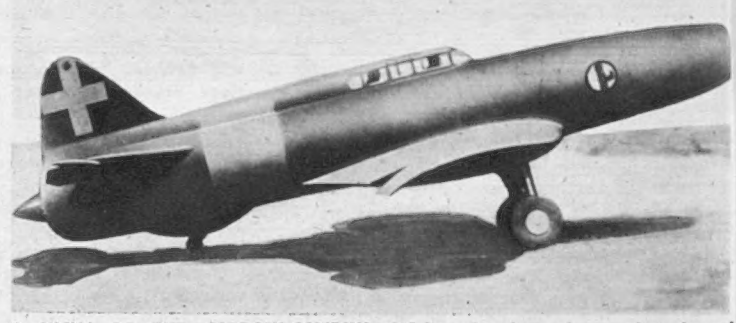
Originally to British design, the improved jet-propulsion engines, eliminating the employment of propellers, were designed by Group Captain Frank Whittle, of the R.A.F. His first engine ran successfully in April 1937: the first successful flight was made in May 1941 by the late Flight-Lieut. P. G. Sayers, chief test pilot of the Gloster Aircraft Company. Since then flights at high altitudes and at extreme speed have been carried out

THE TAIL END OF THE ITALIAN AIRCRAFT, through which the compressed air is expelled



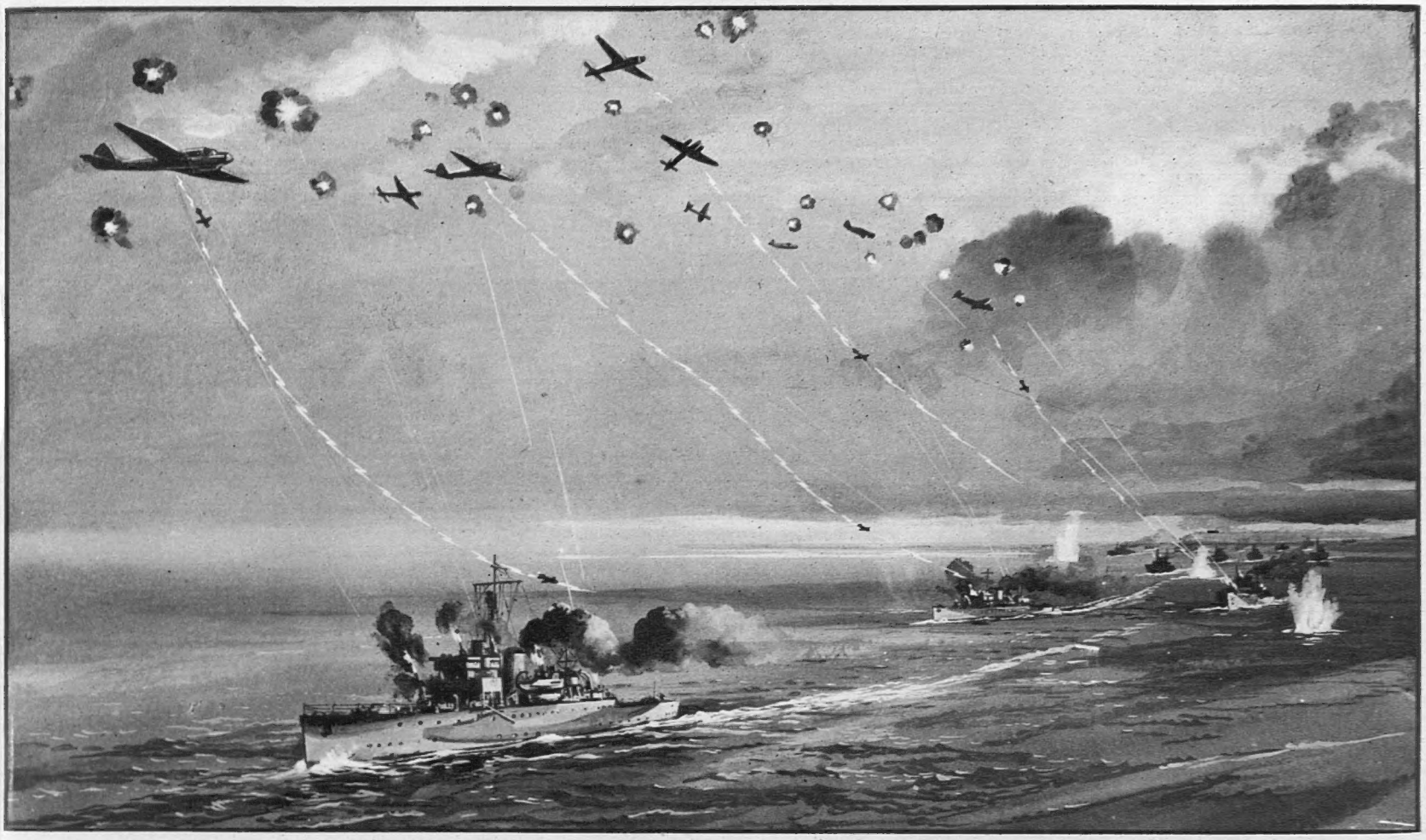
A "JET PLANE" CLIMBING, showing an alternative method of construction, with intake and expulsion of the air in the wings, and not in the nose—*Drawing by Roland Davies*

There are many variants of the jet-propulsion principle, one of which is depicted in Mr. Davies's drawing above. In this case, the air intakes are in the leading edge of the wings, with the expulsion jets in the underpart of the trailing edge behind: with the motor and compressor behind the pilot, the position of the latter could be more forward, thus giving him greater visibility all round. The climbing powers of the new aircraft are said to be remarkable, and the control and manœuvrability excellent. The new system of propulsion does away with the need for an orthodox engine and also for an airscrew: owing to the absence of the latter, there is no need for a big and heavy undercarriage, and the whole aircraft can thus sit lower on the ground



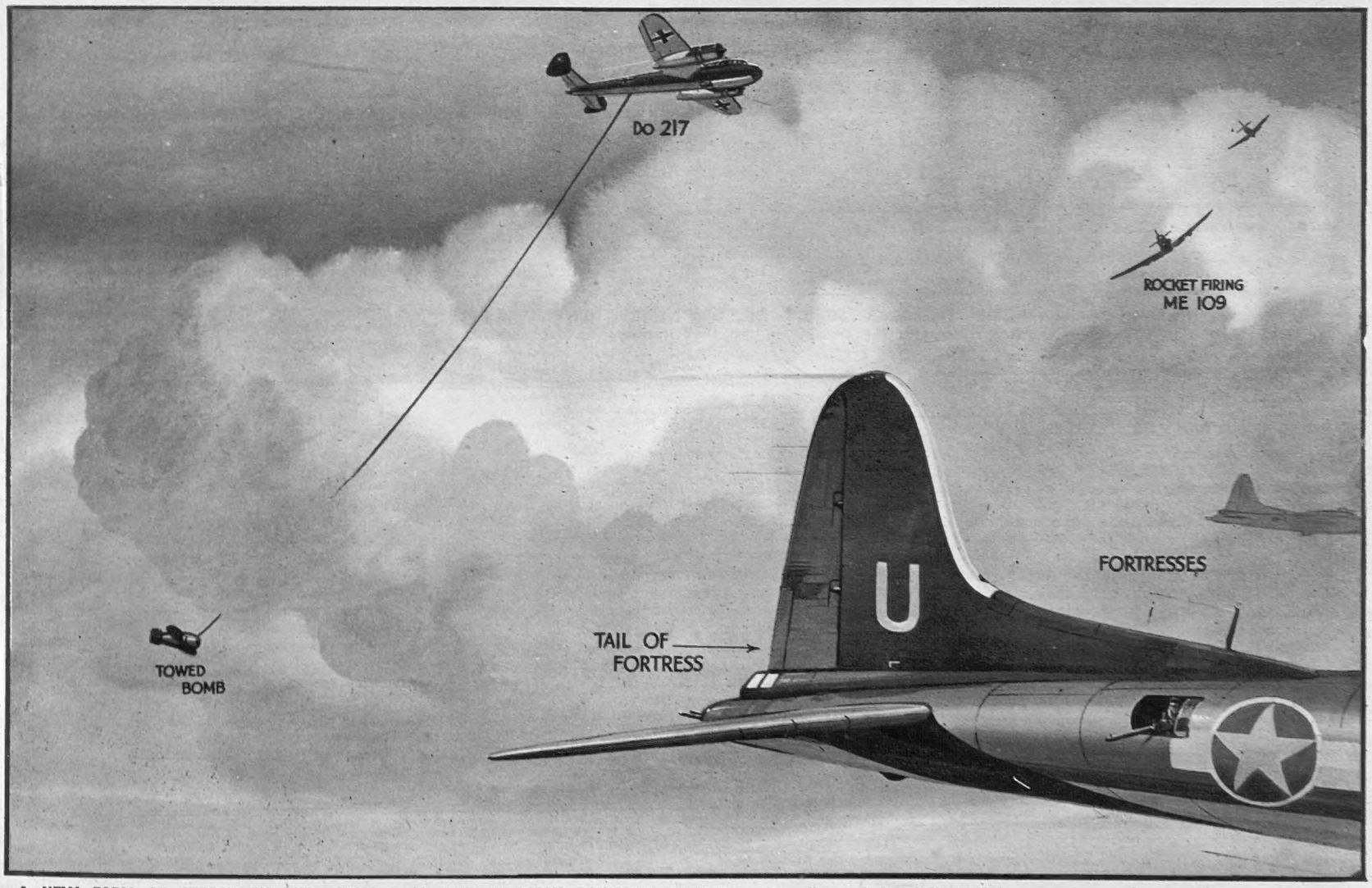
A VIEW OF THE CAPRONI-CAMPINI C.C.I., showing the rocket-shaped fuselage which acts as an air duct. The motor-driven air compressor is situated in front of the pilot

ANOTHER VIEW OF THE ITALIAN MACHINE, with entry for the air in place of the normal propeller in front. The first test flights of this plane were made in August 1940: Colonel de Bernardi, Italian Schneider Trophy pilot, flew it for about ten minutes. On December 1 he flew from Taliedo to Rome at an average speed of 130 m.p.h. The plane was a two-seater, low-wing monoplane, with large single fin and rudder, and an outwards retracting undercarriage: it weighed about 11,000 lbs. The principle of the Caproni-Campini was simple: air entered a circular duct in the nose, was expanded and passed into a compressor (which may be a normal aero-motor or an internal-combustion turbine). It was then ejected through a smaller duct with a controlled outlet behind the tail. The hot exhaust gases of the motor driving the compressor were ejected in the same duct and aided the propulsion



THE AERIAL GLIDER-BOMB USED BY THE GERMANS TO ATTACK ALLIED BLOCKADE VESSELS IN THE BAY OF BISCAY. How they are released from the Nazi bombers and controlled by radio during their course towards the target—*Drawing by Roland Davies*

From a Canadian source, definite proof has been received that the aerial glider-bomb used by the Germans is a far from perfect weapon. Canadian Navy escort vessels have been taking part in an unbroken blockade of the German U-boat bases on the Bay of Biscay. In a desperate attempt to shake off the grip of our naval forces, the enemy have carried out many aerial attacks on destroyers, corvettes and other ships. One of Canada's Tribal class destroyers, the *Athabaskan*, was damaged by an aerial glider-bomb. That, however, is the only occasion on which the Germans have scored a hit, although Canadian vessels have been attacked on many occasions with the new weapon. The R.C.N. corvettes *Edmundston* and *Snowberry* were involved in a battle with "a horde" of Junkers 88's and Focke-Wulfs, yet escaped undamaged. In this action, an R.N. sloop had the unpleasant experience of watching a bomb pass between the mast-tops. Still the ship was not hit!



A NEW FORM OF ATTACK BY THE GERMANS ON THE AMERICAN DAYLIGHT BOMBERS: The "towed bomb," trailed on a long wire—*Drawing by Roland Davies*

Crews who took part in the recent American attack on Kiel have stated that the Germans—besides attacking the raiders with swarms of rocket-firing Messerschmitts and laying a smoke-screen—introduced a new device, the "towed bomb." Several of the airmen on their return said that they actually saw this new bomb device. "It looked like a bomb of about 100 lb., trailing along on a cable behind a twin-engined Do. 217," said one pilot of a Fortress. "The bomb exploded about 50 yards from my aircraft. It did not cause any damage. I was not able to tell how they set it off." According to the experts, these reports should, however, be treated with reserve. Such a bomb, says one, would trail well behind its tug-aircraft. This would force the tug to come within close enough range for a bomber formation to shoot down, not only the bomb, but the tug itself. It is, however, quite possible that the Germans may be experimenting with the use of pilotless glider-bombs against bomber formations, controlling them by wireless from a parent aircraft some distance away—rather like those depicted in the upper drawing on this page

HITLER'S "PAST MIDNIGHT" ARMY

The Army of "Last Ditchers" on whom Hitler is Relying for the Final Desperate Resistance to the Allies.

By FERDINAND TUOHY

EVENTS have marched with such celerity on the Russian and the bombing fronts during the nine or ten weeks since Hitler made his annual beer-hall harangue at Munich that one is entitled to retrieve the principal novelty he then launched and to associate it with a German situation which may begin to present itself at any time.

Stung by Allied harping on Germany's eleventh hour, Hitler shouted in so many words that the enemies of the Reich might as well take their eyes off the clock, for all the good it would do them. For Germany would write something new in warfare by continuing to resist against every odds until twelve and "until five minutes past twelve." It was the Frederick complex at work again but with an addition. For the first time, Hitler's hysteria revealed him as thinking in terms of a last-ditch gangster army.

The day the generals should come to him and announce that an armistice must be sought on the enemy's terms, he would scream refusal. One can hear him bawling that the German radio generals in Russian hands had more than prepared him for the cowardly approach. Well, he still had a do-or-die host dedicated to martyrdom in order that Nazi ideas should survive, and he intended using it! He would use it beyond the bitter end!

That all the elements of such a past-midnight army do exist and on a powerful scale, admits of no argument. A conservative estimate suggests that there is a core of a round million men who maintain a hold on the armed forces and have full charge of all arms and munition depots, and the well-justified belief is that the vast majority will fight like rats in a trap if it be the Führer's will; and that many will fight in any event, rather than face the long knives.

At the centre and overspreading the whole edifice is the Waffen Schutz-Staffel, or Armed Security Detachment, the deceptive label covering several hundred thousand fanatical, highly-trained and physically fine young men. This corps originated in 1939 when Himmler picked out the sturdiest of the Sturm-Abteilungen, or Brown Shirts, to form a super-political gendarmery of Black Guards. Subsequently these were split in three main groups: the Verfügungstruppe, or Operations Corps, the S.S. Security Service, which became a military police throughout the three Services (Wehrmacht), and the Adolf Hitler Leibstandarte, or Lifeguards, the picked paladins among all Germans.

At the outset of the war there were 200,000 of the Operations Corps alone, men specially trained in street fighting and ready to crush trouble anywhere in the Reich. They and the Lifeguards later had what has come to be known as Commando training. These two corps were in 1942 made to form the Waffen S.S. under Himmler. Distributed throughout Germany and the occupied countries and greatly extended by recruiting drives, the Waffen S.S. has also done its full share of fighting in Russia and elsewhere. It had to go for prestige sake. In the result, if the Waffen S.S. is no longer the super-army it once was, those who survive are troops of the toughest, most seasoned kind.

They form divisions (some reports say the equivalent of fifteen) trained to all arms, from the heaviest tanks and guns to dive-bombers and flame-throwers. They are a senior version of the youthful Hermann Göring Division which has excelled in holding up the Allies in Italy by demolishing and withdrawing slowly at minimum cost. At least the Western Allies will have no illusions about dislodging Waffen S.S. formations from well-chosen hill and forest positions or from difficult towns and villages.

Himmler is to be found everywhere in this last-ditch story. A stamp bearing his head has been inadvertently used in Germany. It foreshadows the grip which this pig-faced horror expects to have tomorrow. But already, as Reich Administrator, he invades every field of German activity, and by no agency more thoroughly than by the ubiquitous, penetrating Waffen S.S.

Part of this, his Security Service, has got itself so disliked in its role of spying on the Wehrmacht that it will assuredly find little to detain it if ordered to rally to the past-midnight army. The only ones liable to beat them to the post are the 100,000 of the Gestapo, also under Himmler; and it is no idle flight to visualise a general rush back to Germany of these Nazi supermen, from wherever they may be stationed, whether in the front line or outside Monte Carlo Casino.

The detested Gestapo is more certain of condign punishment than any other Nazi excrescence. I said 100,000, but none of us know, for it overlaps so much with other branches or is hidden away. Its pretty ladies may escape from occupied capitals but Gestapo males will have to run the gauntlet for German soil and quickly seek out the past-midnight army, lest they be felled by their own people. These Gestapo men will make tough guerillas too, for many more of them have qualified through the fighting ranks than the frequent film portrayal of a pot-bellied softie would have us believe.

Along with the Gestapo must be counted the General Security Police, a form of detectives militia, and as such well-hated wherever it functions.

Next come the S.A., or Storm Troopers, at present acting as the mainstay of Home Defence manœuvres in Germany. These toughs were recently given fresh impetus under a new leader, Schepmann, whose first order was to send his minions back to the churches, where "the clergy greeted earlier enemies now rediscovering the faith." Himmler ordered his Waffen S.S. to kneel too. It is difficult to sort out these tribes accurately, but either the S.A. or the S.S. form the Grossdeutschland Division reserved for home defence against Germans and all-comers. This force, far more than a division, is referred to as "The German People's Own Regiment," and if, as is boasted, it contains the élite of National Socialist youth, then we may be sure that it, too, will merge in the last-ditchers. The force is trained and armed as if it had to hold the Russians. Like the Waffen S.S., it has made a speciality of airborne combat.

Such, then, are the clearly-defined components of the past-midnight army. But there is more to come, much more, if of less determinate character.

There is every indication that German Youth is going to receive a final stage of education with the do-or-die brigades and that the degree of sacrifice demanded will be governed by the number of boys and adolescents whose survival is deemed imperative for spreading Nazi gospel into the future, keeping the fires alight. The Hitler Youth has a new leader, Axmann. Boys aged ten to sixteen are conscripted for auxiliary duties. At 16½ they may enter the Waffen S.S. None are more crazy Hitler worshippers than these frightening striplings, and over 3,000,000 lie within their evil genius's grasp.

Boys can help the last-ditchers in all sorts of ways. One has only to examine how "those of the Maquis" are helped in France. The full value of youngsters in secret, underground struggle, and in guerilla warfare, has never been put to the test, on grounds of humanity, but I shall be much surprised if a cornered Führer doesn't do the testing before the end. He has formed three "castles" or associations of picked youths expected to keep the torch burning. The idea is to sink these youngsters unseen in the life of post-war Germany. Hundreds of thousands of less-favoured youths and boys would be on hand to aid the past-midnight army.

More obviously, this host will be augmented by all sorts of men who for one reason or another have nothing to expect, and maybe death, from surrender to the victors. One could put in the van the 9,000 Nazi Party leaders who latterly met at Breslau. All the Party bosses, big and little, are ripe for the last stand, and so will be fleeing Fascists from other lands. When the Germans reel out of France, back with them will go the Doriots and Déats and their 100 per cent. collaborationist followers—and I instance France just to give an example.

An army in the shadows gradually grew up after 1919 and from it came the murder gangs which removed so-called traitors like Erzberger and Rathenau. They were the jobless and the shiftless, men with no personal aim or point in continuing, brutalised men, lonely survivors. This time how much fuller will be their ranks, including men mourning their homes and families through the bombing. Young officers, become "ex" overnight through unconditional surrender, may be expected to head in droves for the past-midnight army.

Hitler has warned of ghastly consequences ahead for the Allies. Has he in mind the putting of everything in the hands of the last-ditchers, from liquid fire to gas, and poisons to bacilli? That the past-midnight army will live by destruction, terrorism and sabotage, is a foregone conclusion. If Hitler's vision comes true, it will also depend a good deal on holding hostages, many with honoured names: back to Germany and up to the hide-outs they 'll all be taken. Imaginative writers foresee the Continent streaked by marauding bands for years to come.

A multitude of trained and ferocious guerillas. Splendidly armed and ready to fight anyone, Allies and Germans alike. Knowing no law whatever except to kill before being killed. Preying on the countryside, wolf-like. The hope is evidently that this host will aid in spreading revolutionary chaos and be "the instrument of bringing down Europe too if we Nazis have to go." And even should it not achieve that, by its examples of martyrdom it would keep the fires of Nazism burning during the years of suppression until the day should break for a third and successful world-push under another Führer.

The names one most readily associates with this past-midnight army are those of Himmler, Rommel, Speer, Goebbels, Schepmann, Axmann and Borrmann, all Nazis to the core and each fitting into his niche in a job like that which may be allotted. Speer would be invaluable for fortifications and Borrmann for perpetuating the intentions of his Führer, for whom he is Deputy.

Already there is speculation as to what might happen, should this host come into being. Some believe the Russians hope to turn the rest of the German Army in fury against it: hence the German generals' anti-Hitler broadcasting from Moscow.

Another view is that an all-out last stand on a huge scale, such as I have attempted to sketch, will never be ordered, or, if ordered, will not be obeyed outside the ranks of men fleeing for their lives; since the way to perpetuate the Third Reich below ground is to preserve as many of its paladins as possible.

THE POLISH CABINET IN LONDON, SITTING IN EMERGENCY SESSION FOR FORTY-EIGHT CONTINUOUS HOURS to confer on the Exiled Government's policy relative to the crossing of the 1939 frontiers by the Russians

The Polish Prime Minister, M. Stanislaw Mikolajczyk, is here addressing the Cabinet behind closed doors: from left to right around the table are General Marian Kukiel, Minister of National Defence; M. Tadeusz Romer, Minister of Foreign Affairs; Dr. Ludwik Grosfeld, Minister of Finance; M. Jan Stanczyk, Minister of Labour and Social Welfare; the Prime Minister (standing); M. A. Romer, Secretary-General to the Cabinet; M. Marian Seyda, Minister of State, in charge of preparations for the Peace Conference; Professor Waclaw Komarniki, Minister of Justice; M. Karol Popiel, Minister of State, in charge of planning; Father Zygmunt Kaczynski, Minister of Education; Professor Stanislaw Kot, Minister of Information; and M. Wladyslaw Banaczyk, Minister of Home Affairs

THE NAVIGATOR AND PILOT OF "FOUR LEAF CLOVER" examine the bullet holes in the side of the tail gunner's position and in the gunner's sighting-glass after returning from the January 11 raid on North-West Germany by daylight. The American planes taking part experienced the heaviest fighting they have yet encountered during the course of that day's operations

WHAT HAPPENED TO ONE AMERICAN "FORTRESS"

During the Great Air Battles over Germany on January 11

LIEUTENANT ARTHUR W. MACK, PILOT OF "FOUR LEAF CLOVER," examines the bullet-punctured top turret of his aircraft

Some of the fiercest air battles of the war were fought on January 11, when a strong force of American Fortresses and Liberators attacked vital targets in North-West Germany. For the first time the *Luftwaffe* put up its full strength to attack the bombers, and desperate air battles were fought all the way out and home. Swarms of German fighters came up, and other methods of attack included aircraft trailing bombs on long cables (as described on page 103 of this issue), rocket-planes and rocket "flak." One of the Fortresses, "Four Leaf Clover," reached home after the raid raked from tail to nose and from wing-tip to wing-tip. Not one of its engines escaped damage, and one of them was on fire when, with half of its rudder shot away, it landed by automatic pilot. Three of the crew—the top-turret gunner, the tail gunner and the radio operator—were wounded. The Germans later stated that, in addition to "air mines," numerous fighter and "destroyer" planes equipped with rockets were employed to defend the target areas. After some fantastic claims had been made by the enemy, it was revealed by American H.Q. in Europe that fifty-nine of their bombers had been shot down, but that at least 152 German fighters had been destroyed during the battles in the air

THE TOP TURRET WAS HIT BY BULLETS, and the aircraft suffered considerable other damage whilst fighting its way out of Germany after the daylight raid on January 11. The "Luftwaffe" came up in very great strength, using even reserve squadrons, to oppose the American bombers on this occasion

On right—**THE HOLE MADE by a 20-m.m cannon shell in the outer tip of the left wing of the "Four Leaf Clover"**

DIVE-BOMBERS OF THE AMERICAN NAVY ATTACKING JAPANESE CRUISERS OFF THE MARSHALL ISLANDS, on an occasion when a great number of enemy vessels were sunk. The aircraft depicted in this drawing are Vultee Vengeance dive-bombers and torpedo-bombers—*Drawing by Roland Davies*

In the South-Western Pacific the Japs are compelled to make use of great numbers of naval vessels and merchantmen to reinforce and supply their various bases. In so doing, they are frequently detected and assaulted by American bombers and dive-bombers: their losses in naval vessels—already considerable—are being increased almost daily. The incident depicted above occurred when a U.S. carrier "task force" attacked the Marshall Islands (which lie 500 miles to the north-west of the Gilberts, recently attacked and occupied completely by the Americans). During the onslaught by dive-bombers and torpedo-bombers flown from the carrier, six Japanese vessels were sunk, including two light cruisers: four other ships were damaged, and at least seventy-two enemy planes were destroyed. The U.S. aircraft losses were light, and only one American ship suffered minor damage

AIRCRAFT VERSUS THE JAPS IN THE SOUTH-WEST PACIFIC

Where Allied Bombers are Hitting at the Enemy by Land and by Sea

—With Special Sphere Drawings

THE TOMB OF ANOTHER JAPANESE MERCHANTMAN: The bomb smoke had not yet cleared away before this enemy cargo ship had already touched bottom as the result of an attack by U.S. Army bombers. The scene of this incident was the southern coast of New Britain, where the Americans have already established bridgeheads on the Arawe Peninsula as a preliminary to further operations against the great Japanese supply and naval base at Rabaul

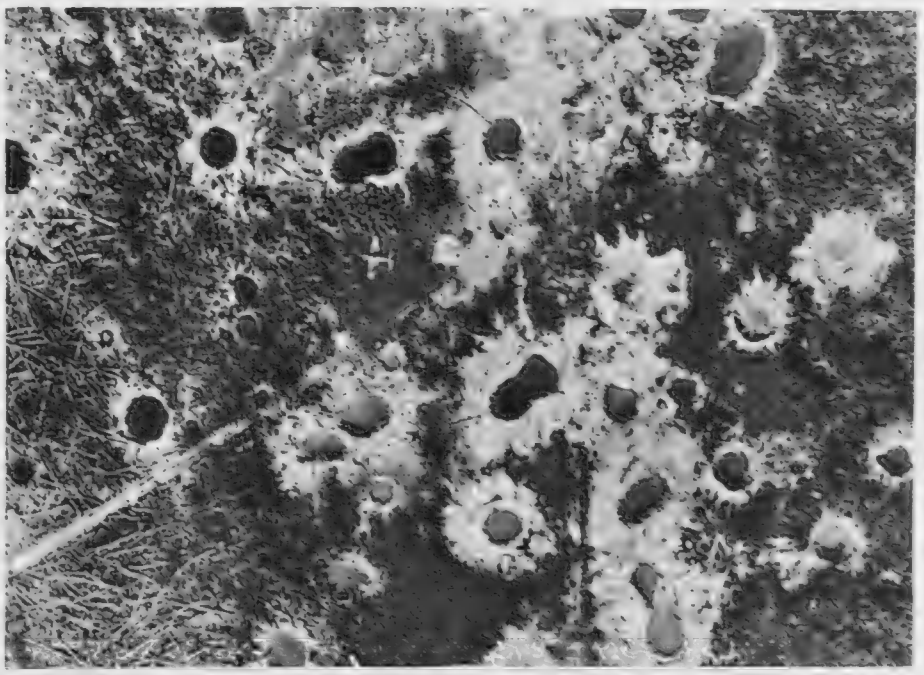
A LARGE DESTROYER IS SIGHTED IN THE SOUTH PACIFIC by a B-25 Mitchell bomber mounting a 75-mm. cannon in its nose. The aircraft circles and attacks

AFTER THE ATTACK, the enemy ship is left burning and in a sinking condition. The arrow points to the damage caused by one of the hits from the big cannon now carried by the Mitchell bombers for just this purpose

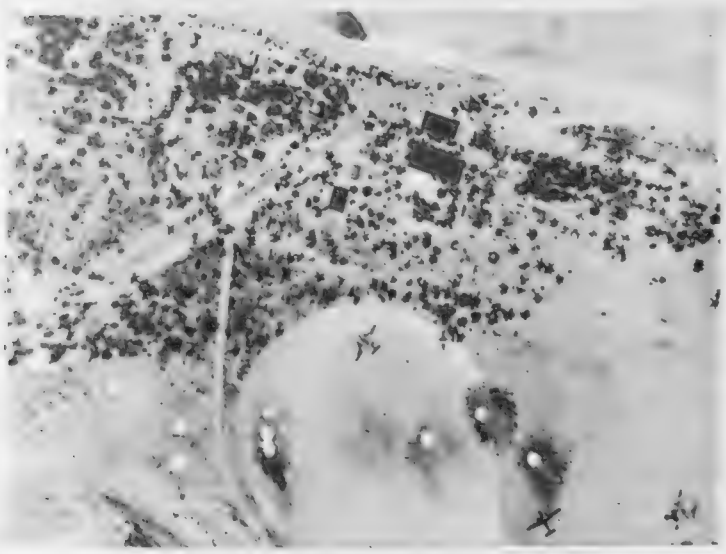
BOMBING A JAP AIRFIELD ON THE ISLAND OF NEW BRITAIN: An impression of the scene during an attack by Martin Marauders in the Cape Gloucester area, where the Americans recently made their second landing on the island—*Drawing by Roland Davies*

As soon as the landings on the Arawe Peninsula of New Britain had been made, the Americans began to attack other points on the island, which houses, at its easternmost tip, the big enemy base of Rabaul. In two attacks on Cape Gloucester, at the western end of the island (where another American landing has since been made), 414 tons of bombs were dropped—a record for the South-West Pacific. The planes bombed the airfield, the supply and bivouac areas of the Japs, gun positions and nearby villages on the coast, starting large fires and explosions and doing widespread damage

AFTER THE CAPTURE OF MUNDA AIRFIELD, IN NEW GEORGIA. This was an important Japanese air base: it was captured on August 7, 1943, after seven weeks of bitter fighting. Since then it has been vastly improved by the Americans. Engineers have widened, lengthened and generally "spruced up" the landing-ground. In the foreground of this picture are Grumman "Avengers": behind them are "Hellcat" fighters



ONE OF THE IMPORTANT OBJECTIVES ON THE ISLAND OF NEW BRITAIN: The Japanese airfield at Gasmata after a very heavy Allied raid. This base has been consistently bombed by American and Australian planes: this is how it looked to a pilot of the R.A.A.F. after a "pasting" by Beaufighters, Bostons and Beauforts some months ago. The Jap planes caught on the ground by the raiders are still there, surrounded by the giant, waterlogged craters punched in the field. Notice the runways, made quite useless until extensive repairs have been carried out. This attack was made at a time when the airfield was being used by the Japs for their counter-measures during the Allied operations in the Solomons



On left—**HOW ENEMY AIRFIELDS IN THE GILBERT ISLANDS WERE ATTACKED FROM THE AIR:** This picture was taken at Tarawa, one of the two Gilberts, on which U.S. Marines and soldiers are now in total possession, having wiped out the Jap garrisons. Before the landings, U.S. airmen carried out heavy bombardments of the airfield on Tarawa, and its surrounding installations, with the results depicted here. The craters caused by bomb explosions across the runways are clearly seen

THE PROBLEM OF THE EASTERN HALF OF EUROPE WHEN THE SECOND FRONT IS OPENED: In this region there are considerable natural mountain defences, and there is no way in at all from certain directions. In this map only the greater heights are shown, ranging from 2,500 ft. up to 10,000 ft. *(see notes below)*

The GREAT ALLIED ATTACK on GERMANY

And the Imminent Opening of the Second Front in Europe

Is an invasion of the German Plain possible through the lands adjacent to the eastern half of the Mediterranean? A glance at the above map would seem to demonstrate that a military entry into the Plain of the Po would prove to be but an occupation of a disappointing cul-de-sac. In fact, a study of the orographical construction of the eastern half of Europe shows that the problem of finding doorways through which to reach the main forces of the enemy is by no means an easy one. An attack through Greece leads to mountain masses, through which there is only one difficult pass, hedged in by mountains to east and west. Any scaling of the Dalmatian limestone barrier leads, on the one hand, to the dagger-like peaks of the Karawauken Alps, and, on the other, to the mountain-encircled plain of the Danube, from which there is no outlet—save by way of the Moravian Gate: a passageway fraught with mountain difficulties of its own.

In certain areas, it is difficult to avoid the conclusion that Europe is in many ways a natural fortress. The dogged perseverance of the Allied armies is, however, such that the enemy fears landings on several coasts which would promise difficulties which the Allies might be prepared to face. He clings tenaciously to his Balkan outposts; he puts 10,000 men into the island of Rhodes. He withdraws the population of parts of Yugoslavia, bordering on the Adriatic, fearing that the cities of Budapest and Vienna might be diplomatic and military lures to Allied High Command. He certainly has cause for special nervousness where the entry of the Allied forces would be supplemented by the hearty and experienced co-operation of local patriotic bands who would materially assist the invaders' task. The enemy's total line of defence from Greece to Norway measures 5,000 miles.

GENERAL NIKOLAI VATUTIN, the great Russian commander in the Dnieper Salient

On right—

WHEN the enemy began his offensive in June 1941, it seemed that nothing could stop the onward sweep of the armies pushing towards the Volga. They were held at last, at the passes over the Caucasus mountains, and when winter again faced them they could go no farther. Worn out with their fruitless attacks upon the battered remnants of Stalingrad, their strength gradually weakened, till the reinvigorated Russian armies put forth a new effort, and in December began the break-through which has never ceased. The German troops at Stalingrad, numbering 91,000, surrendered on February 2, 1943, and the siege of Leningrad was partly broken on January 18. Though the German armies kept up a stubborn resistance throughout the year, they were not able to stop the Russian advance pushing them back over the wide areas over which they had advanced so confidently during the two preceding summers.

THE FOUR MAJOR THRUSTS OF THE GERMAN ARMY INTO RUSSIA: and how the Russians have beat them back and then thrust forward towards their own 1939 frontiers in three very important directions

A STERN CHASE THROUGH THE ARCTIC SEAS IN EXTREMELY BAD WEATHER AND IN THE POOR VISIBILITY OF FAR NORTHERN WATERS. The "Duke of York," with the cruiser "Jamaica" and with attendant destroyers, making best speed to overtake the German battleship. The British warship is 35,000 tons of steel, capable of being driven at 30 knots, or 35 miles per hour. Under such conditions she literally ploughs through seas to which she would rise easily at a lower speed, and gives an impression of weight and power which is impressive and awe-inspiring in the extreme. During the chase of the "Scharnhorst" the weather was very bad, and when the enemy warship was located the ensuing battle was fought in the dark of a late Arctic afternoon

A RECORD OF THE "SCHARNHORST" ACTION

Shown in a Series of Sketches by "Sphere" Artists in Illustration of Salient Features during the Naval Battle in the Arctic

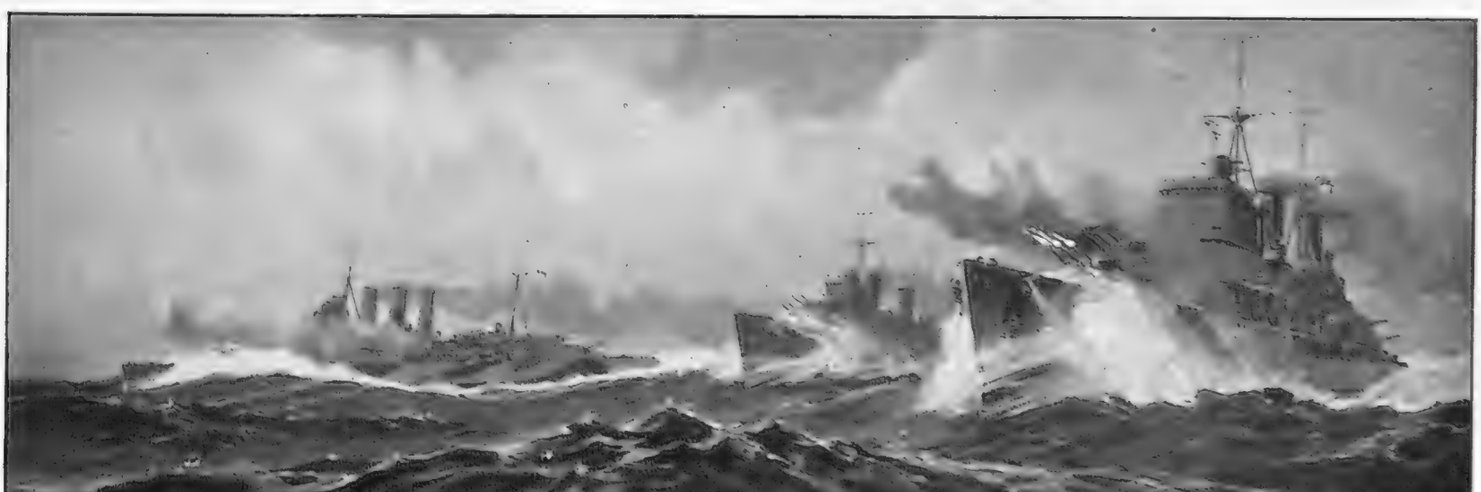
—Sketches by Wm. McDowell

On this and the two following pages we reproduce a number of sketches by Mr. Wm. McDowell, the naval artist, in which some of the more striking incidents during the chase and destruction of the *Scharnhorst* are depicted. So dramatic and exceptional was the whole atmosphere of the battle that one of the officers who took part declared that, at times, he felt that he was witnessing one of "Hollywood's gigantic productions": it seemed impossible, he declared, that this was the real thing—a night action at sea!

As our readers know, the battle was fought out in the dark of an Arctic afternoon. Flares would suddenly light the scene with dazzling brilliance, then again—darkness, as the great naval vessels charged through the icy waters and heavy seas towards the target. In one area during this thrilling night battle was the giant *Duke of York*, steaming all-out towards the enemy, escorted by the cruiser *Jamaica* and a destroyer screen, and throwing up a colossal bow wave as she travelled at her full 30 knots. In another area, some way to the north, a formation of three British cruisers, under Admiral Burnett, was steaming at high speed in line abreast towards the *Scharnhorst*, presenting a picture of naval might and mobility such as the participants may wait for many a year to witness again.

The velvet blackness was lit up spasmodically as the flares and tracers went their way: soon afterwards came the gun flashes from the cruisers, and, finally the lightning flashes from the 14-in. guns of the *Duke of York*. The tense emotions of those in command on the bridge of the ships engaged in this unique action can well be imagined!

BRITISH DESTROYERS IN A ROUGH SEA IN FAR NORTHERN WATERS: H.M.S. "Matchless," "Musketeer" and "Mahratta." The two first (on the left) formed part of the destroyer force which attacked the "Scharnhorst." This picture well indicates the manner in which the vessel's wartime camouflage baffles the observer

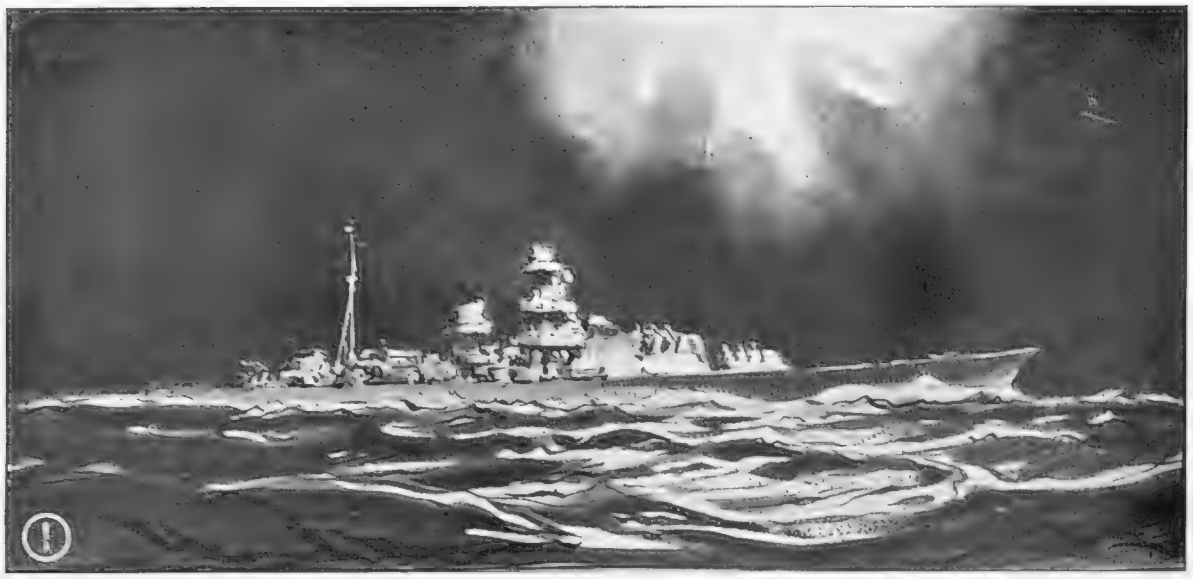


HOW THE THREE CRUISERS OF THE SQUADRON COMMANDED BY ADMIRAL BURNETT WENT INTO ACTION. On the left is the "Norfolk," in the centre is the "Sheffield," and on the right the "Belfast." Admiral Burnett, in command of the Cruiser Squadron, had placed himself between the "Scharnhorst" and the convoy: when the enemy battleship came on the scene all three cruisers opened fire, and the Admiral turned the squadron in line abreast head-on to the enemy and then steamed in straight at him at full speed. For a moment it looked as if the "Scharnhorst" was going to stand and fight: then, according to Admiral Burnett, he appeared to lose his nerve and turned tail and fled

A RECORD OF THE "SCHARNHORST" ACTION

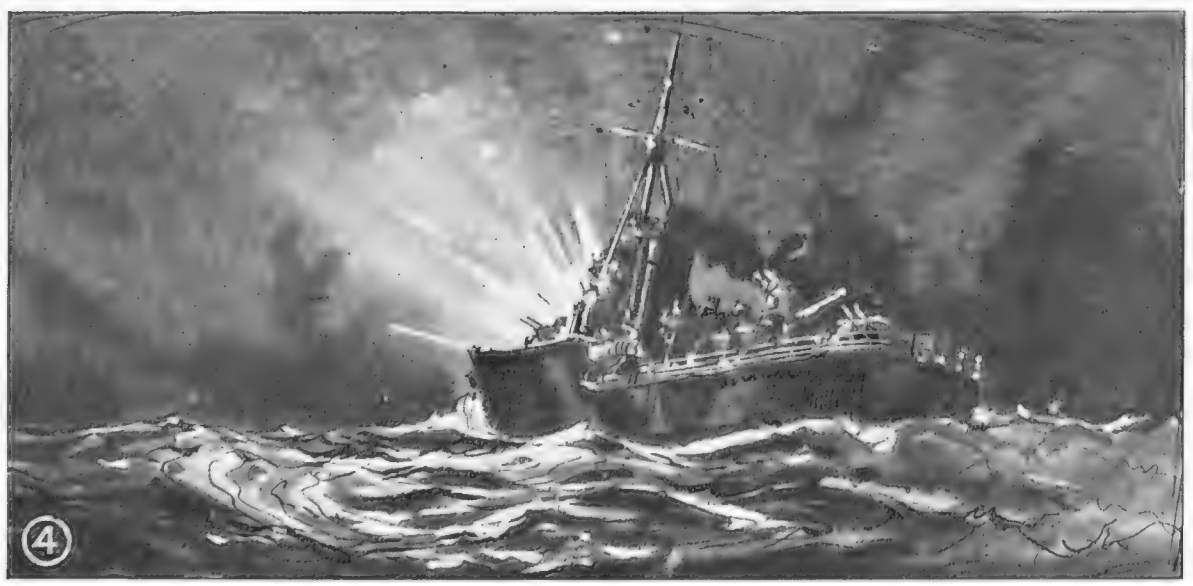
A Series of Sketches by Wm. McDowell

(Continued from preceding page)



1. AT 4.49 P.M. ON DECEMBER 26 the "Duke of York" (having turned to the southward parallel to the "Scharnhorst") illuminated the German vessel with starshells at a range of six miles. The "Scharnhorst" was then seen to be travelling at top speed, and her great length looked very impressive

2. AT 4.50 THE "DUKE OF YORK" OPENED FIRE with a broadside of her 14-in. guns. The flash was blinding. Officers were able to follow the huge shells as they flew through the night sky towards the German battleship "just like shooting stars," as one declared



DURING THE CHASE OF THE "SCHARNHORST." Looking down on the snow-covered decks of the "Duke of York"

THE "DUKE OF YORK'S" SECONDARY ARMAMENT ready for any attack from the air. No such attack developed, however

THE END OF THE STORY: Blindfolded "Scharn kit, being landed at a British port on vivors were picked up by H.M. Destroyers *Scorpion* opportunity to H.M.S. *Duke of York*. The majority of them the *Scharnhorst's* last sortie was their first markedly lacking in surliness and arrogance of any guard they gave three rousing cheers for their years in the United States and spoke excellent the prisoners was seriously injured; their sodden supplied for shipwrecked

TORPEDO-MEN OF THE CRUISER "JAMAICA," who finally despatched the German battleship

3. AT ABOUT 6.45 the destroyers "Savage" and "Saumarez" swept in on the starboard bow of the enemy, whilst two others went in on the port bow, under a murderous fire from the "Scharnhorst." They pressed on, and the range was under one mile when each fired their torpedoes point-blank

4. AMONG THE ATTACKING DESTROYERS, only the "Saumarez" was hit: she sustained damage to her upper works. One officer and ten ratings were killed, and eleven other ratings were wounded

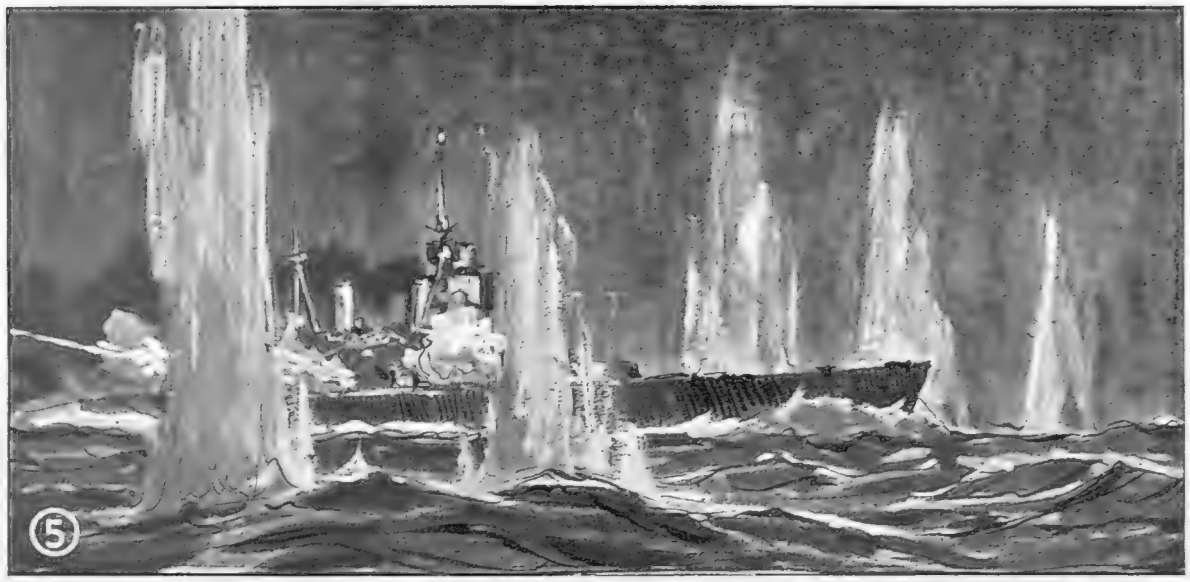
5. THE "DUKE OF YORK" surrounded by the fountains of water thrown up by the "Scharnhorst's" shells as they landed in the water just off the bow. The battleship was undoubtedly lucky, but she was masterfully handled throughout by her captain

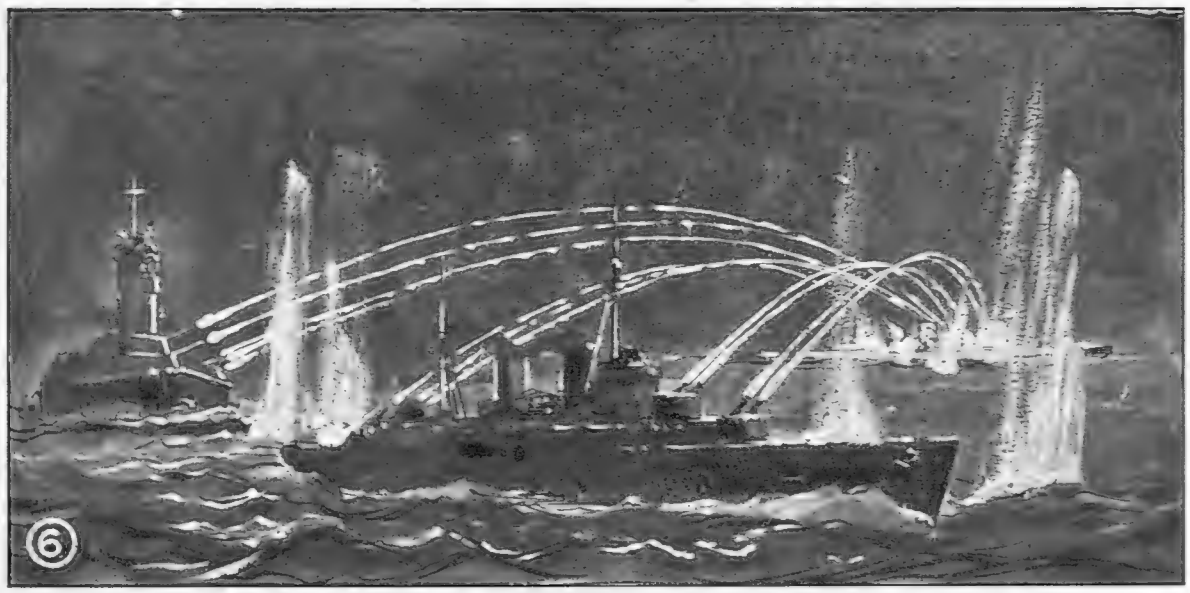
6. THE AMAZING SCENE AS THE BATTLE DEVELOPED, with the air full of British shells. It was possible to follow the big 14-in. projectiles of the "Duke of York" (behind) and the 6-in. shells of the cruiser "Jamaica" (in foreground) as they went hurtling towards the "Scharnhorst"

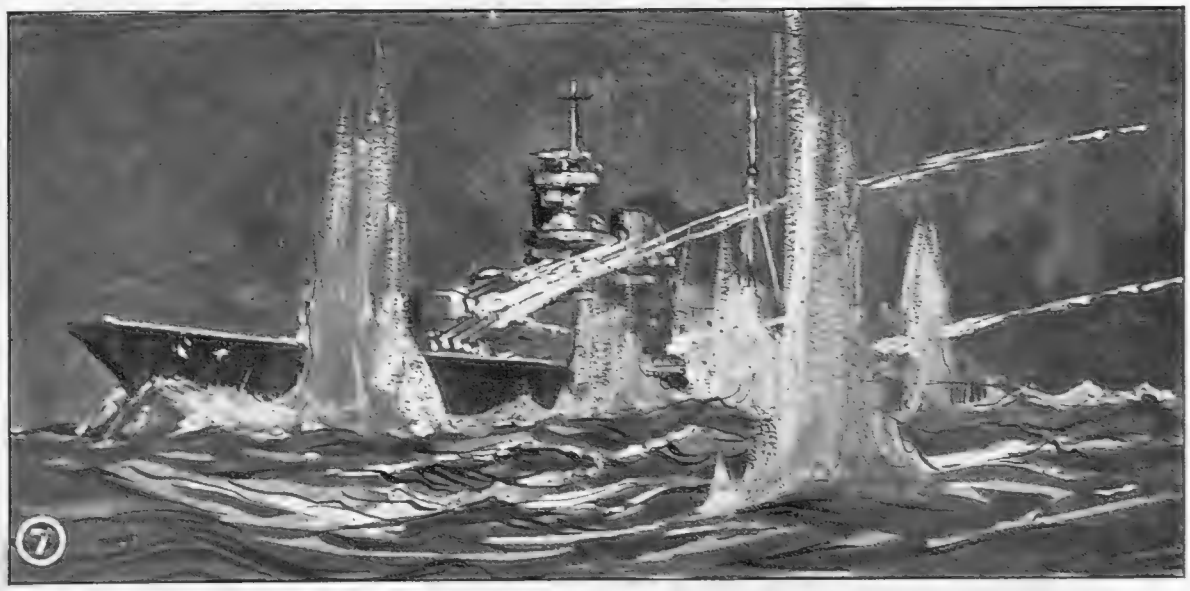
7. DURING THE CRUISER ACTION, after the "Norfolk," "Sheffield" and "Belfast" had raced in towards the "Scharnhorst" in line abreast: red points of light on the enemy's side indicate that the cruisers were scoring hits

8. THE "SCHARNHORST'S" TACTICS. During her duel with the "Duke of York," the enemy's tactics were to fire a broadside and then turn away, so that her length was hidden and only a narrow width of her beam was presented as a target

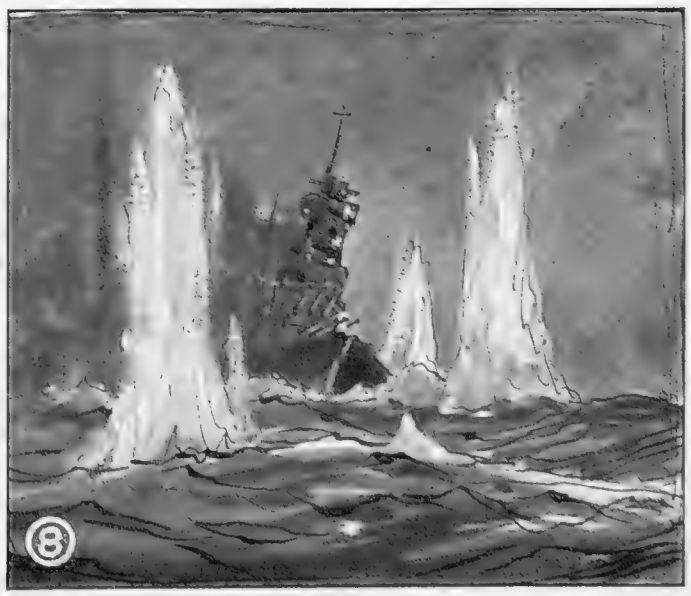
9. THE "DUKE OF YORK'S" FOREMAST IS HIT. She received only two minor hits throughout the action, both of which penetrated the masts







horst" survivors, in merchant seamen's rescue their way to internment. In all, thirty-six sur- and *Matchless*, and they were transferred at the first were young men aged nineteen to twenty-one; for some trip at sea. Their general demeanour and attitude was kind, and when they left the *Scorpion* under armed rescuers, led by one German who had spent several English. Although suffering from exposure, none of uniforms were replaced after their rescue by kits merchant seamen



A STUDY OF H.M.S. "NORFOLK," A FAMOUS COUNTY CLASS CRUISER (of 9,925 TONS), WHICH German battleship "Scharnhorst" within the Arctic Circle on December 26 last. Here she is s

A FINE BRITISH CRUISER

With a Great Record which Culminated in the Recent "Scharnhorst" Victory

—A Special Sphere Drawing

During the action against the *Scharnhorst* off North Cape, the cruiser *Norfolk* formed one of the formation commanded by Vice-Admiral R. L. Burnett. This Cruiser Squadron (consisting of the *Belfast*, *Norfolk* and *Sheffield*) was escorting the convoy in a position to the south-east of Bear Island, when, in the half-light of the Arctic dawn, contact was first made with the *Scharnhorst*.

The convoy was diverted to the northward, and the cruisers opened fire on the German battleship. One hit was claimed by the *Norfolk*, and the enemy then turned away from the direction of the convoy. Later in the day, just after midday, the "expected happened," as Admiral Sir Bruce Fraser put it, "and the enemy reappeared." The cruisers, which were stationed ahead of the enemy battleship, again opened fire. But so did the *Scharnhorst*: the *Norfolk* was hit, and one officer and six ratings were killed and another six were seriously wounded. The *Norfolk*—and the destroyer *Saumarez*—were the only two British warships to suffer damage during the action.

This is not the first major engagement of the war in which the cruiser *Norfolk* has been engaged. In May, 1941, she played a leading part in the pursuit and destruction of of the *Bismarck*. After air reconnaissance by Coastal Command aircraft had revealed that a German battleship and cruiser had sailed from Bergen, certain dispositions were ordered, and, as a result, H.M.S. *Norfolk* (wearing the flag of Rear-Admiral W. F. Wake-Walker) and H.M.S. *Suffolk* were ordered to take up a position in the Denmark Straits. Early in the morning of May 26, H.M.S. *Hood* and H.M.S. *Prince of Wales* made contact with

***On right*—THE CAPTAIN OF THE "NORFOLK"—Captain Donald Keppel Bain (on left), who has been given the D.S.O. for his part in the "Scharnhorst" action: on the right is Lieut. M. P. Pollock, the "Norfolk's" gunnery officer**

WHICH CLAIMS THE RECORD FOR ARCTIC SERVICE IN THIS WAR. She has been round North Cape over a dozen times, and she played a prominent part in the destruction of the e is seen passing the snow-covered Arctic shores with which she is so familiar, under a heavy northern sky and through swollen winter seas—*Drawing by Montague Dawson*

the enemy, and action was immediately joined. The chase was continued, with the *Norfolk* and the *Suffolk* shadowing the enemy, despite all his efforts to shake off the pursuit. So the chase went on until daylight on May 27, when the *Bismarck*, which, meanwhile, had been relentlessly attacked with torpedoes by the British ships and naval aircraft, engaged our destroyers by gunfire. The *Norfolk* was in action with the *Bismarck* almost immediately, and very soon the enemy was being engaged by our heavy ships. The German battleship sank at 11.01 on the morning of May 27, 1941.

H.M.S. *Norfolk* is one of the Navy's largest cruisers. She belongs to the famous County class, and she claims the record for Arctic service in this war. For thirty weeks in 1942 the *Norfolk* was working in the far north, and for five consecutive weeks her crew never saw the sun's disc, living in perpetual twilight or darkness. She has steamed many thousands of miles in northern waters since, and she has been round the North Cape about twelve or sixteen times in this war. She was designed by Sir William Berry, begun in July 1927, launched in December 1928 and completed in June 1930. The *Norfolk* is a vessel of 9,925 tons, and she carries a complement of 650. Her armament consists of eight 8-in. guns and a great number of smaller weapons; she carries her own aircraft on board and a catapult for its launching. Her speed is 32¼ knots. It has been stated that about 60 per cent. of her crew are "hostilities only" men, and that about three-quarters of her officers are R.N.V.R. who a few years ago had no connection with the Navy.

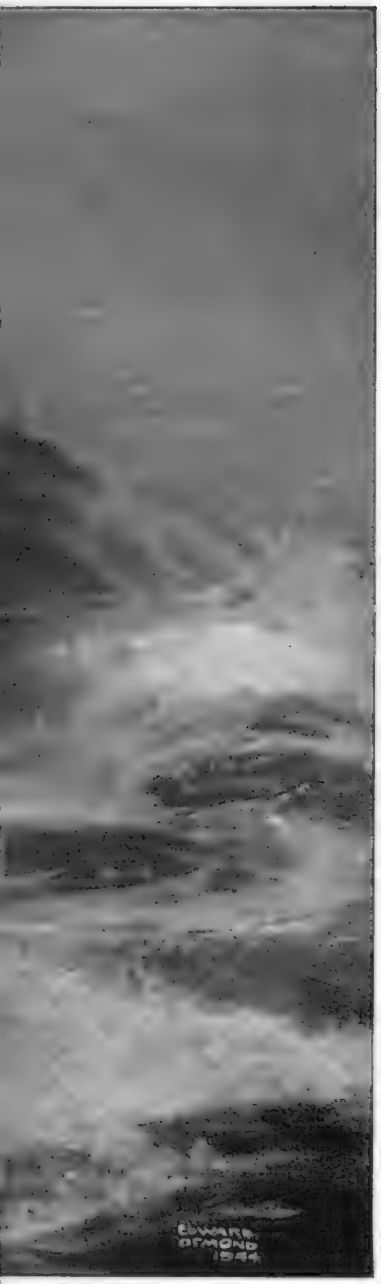
***On right*—THE FIRE-FIGHTING CREW who put out the fire which started aft on the "Norfolk" when she was hit by a shell from the "Scharnhorst." They cut a hole through the deck to enable the hoses to be played on the fire below**

STORMS SWEEP OVER THE ADRIATIC COAST AND CAUSE GREAT DISTRESS TO THE EIGHTH ARMY ALONG THE SHORE. As the "Bora" comes roaring in from the sea, tents and bivouacs are swept away by the high wind and Army encampments are flooded out by the accompanying rains—*Drawing by Edward Osmond*

The Eighth Army has had to face recently not only the torrential rains which have been pouring down from the hills and mountains of the Apennine range, but also the storms which have boiled up in the Adriatic Sea. The Adriatic has had a bad reputation for storms from the very early days of Roman history; the possibility of meeting the roughest weather was a danger which invaders from Greece and Dalmatia had to consider with the greatest care. At the turn of the year, the troops along the Adriatic shore experienced a gale which swept tents and bivouacs away before it; the high wind which blew up the sea was followed by a storm of rain. Men soon found their sleeping quarters deep in water. Those stationed farther from the shore, in houses, fared no better, for roofs were carried away and walls, weakened by shell-fire and blast, collapsed before the gale. The local inhabitants appear to be familiar with this Adriatic wind as an old enemy. It was probably the wind known as the "Bora," which has been known to blow from the highlands of the Balkans for many days at a time—a cold and fierce blast which drives even the hardiest inhabitants to the shelter of their homes.

On right—**AFTER A RAID BY BRITISH COMMANDOS.** The men came inshore in assault boats and "Ducks": as they disembarked, they waded up to their necks in water to the shore. The enemy was taken completely by surprise as the Commandos closed in with bagpipes playing and guns blazing. Many German prisoners were taken: in the picture on the right one of the latter is seen surrounded by his black-faced captors

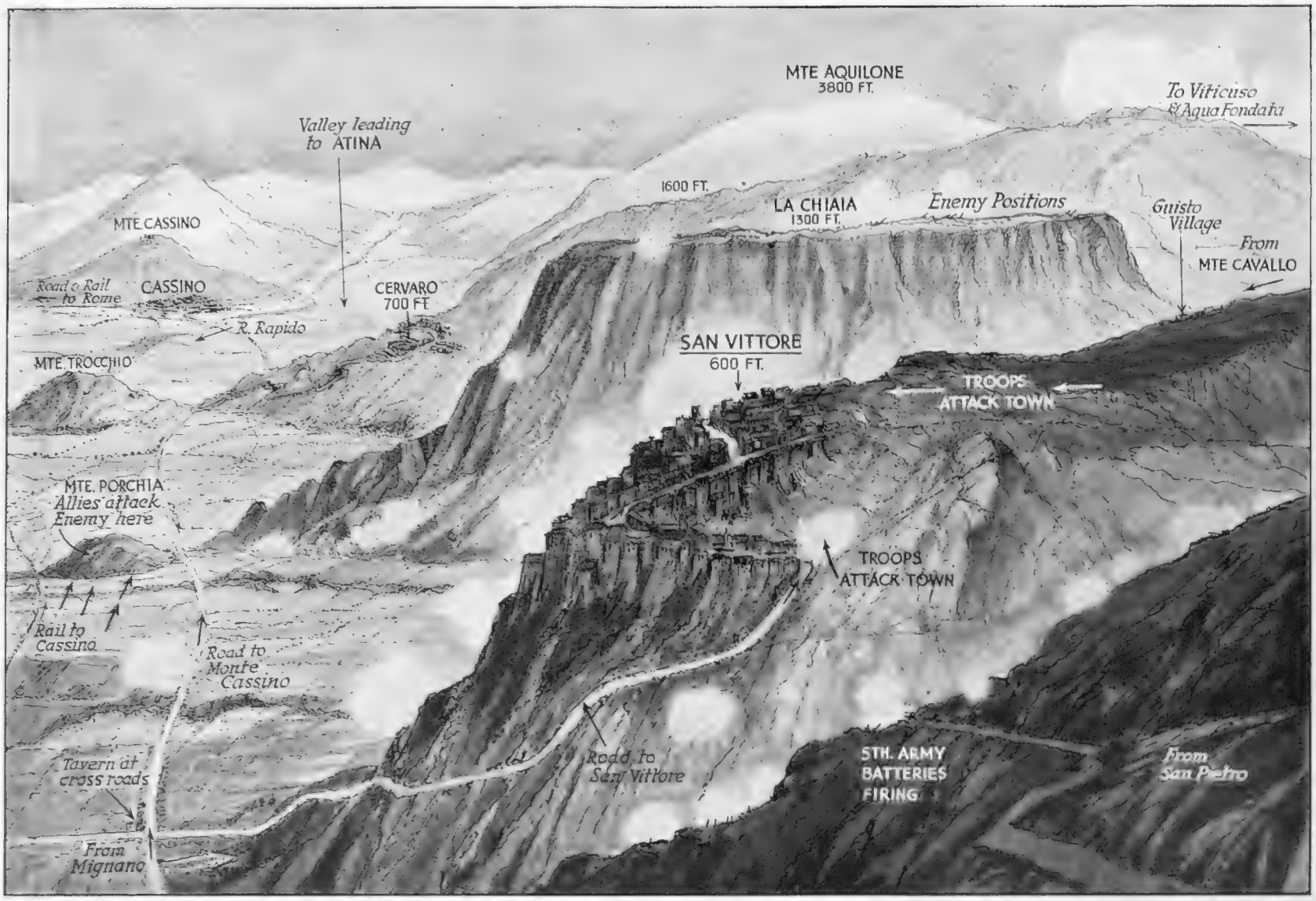
On left—**ORTONA AFTER ITS CAPTURE BY THE CANADIANS: a view of the rubble-strewn streets of the town.** The Canadians finished their grim task of five days of street-fighting in the coastal town on the afternoon of December 28. Infantrymen cleared the streets of snipers and machine-gunners, supported by tanks. Teller and "S" mines hampered the progress of the advancing infantry through the narrow streets, where the dead lay thick. The Germans had used paratroops as foot-soldiers in the town; and all the dead enemy were men from paratroop regiments



The COMING of the "BORA," and Other Pictures from the Italian Battle Area

A MINE SCHOOL OF THE FIFTH ARMY: N.C.O. instructors watching their soldier students at work behind the "Moascar Stocks" learning how to dismantle enemy mines without seeing them, as a preparation for night operations

Now that the enemy are using more mines and booby-traps than ever before, a school has been opened in the Fifth Army area where units other than Royal Engineers take a four-day course designed to give sufficient knowledge of our own and enemy mines, minefields and booby-traps to enable them to deal efficiently with this type of warfare, and to minimise casualties. The first day of the course is devoted to lectures on Teller mines, "S" mines, German prepared charges, wooden-box mines and Holzmines. The second is spent learning of Italian, British and American mines and the laying of minefields. The third day is devoted to studying the function and practical use of the mine-detector, and to sweeping the areas mined on the second day. The fourth day is taken up with lectures and practical booby-trapping of buildings and their subsequent clearance. Prior to clearing, the men spend a short time in the "Moascar Stocks," a device constructed so that they can handle different types of mines and booby-traps at night without seeing what they are doing



THE FIERCE BATTLE FOR SAN VITTORE IN THE CASSINO AREA, CAPTURED BY THE FIFTH ARMY ON JANUARY 7. In this drawing the rock-perched town is seen from the hills beyond San Pietro. The Allied troops attacked from several directions and fought street by street, whilst the enemy remained in possession of La Chiaia, a precipitous elongated hill immediately behind. The main valley of the "Road to Rome" is shown on the left, with the important town of Cassino in the distance —*Drawing by Percy Home* (see notes at left)

BATTLE SCENES FROM THE ITALIAN FRONT

Portrayed by "Sphere" Artists

The Fifth Army, battling its way across the high hills on the northern side of the valley leading to Cassino, was confronted with one of the hardest problems which it has yet had to undertake in the present campaign. After the capture of the hill village of San Pietro, the Fifth Army found itself confronted with the small rock-perched town of San Vittore. Correspondents standing on the opposite ridge described the precipitous nature of the site. Houses appeared to be built on top of one another, and the position was only to be reached, in normal times, by a steep branch road leading up San Vittore, from the main road from Mignano to Cassino. The town occupies a site 600 ft. above sea-level.

As will be seen from the drawing above, the road, on reaching the outskirts of the town, turns sharply to the left. After proceeding for a space in this direction, it turns sharply to the right and then once more to the left. Large-scale maps show a number of hill tracks which would be used by the local peasantry, in peacetime, but which have now been turned to military use.

Towards the end of December the entry of the Fifth Army into San Vittore was reported from Cairo, but this was premature. A couple of weeks of fierce fighting ensued before this German stronghold hanging in mid-air could be finally cleared of the enemy. For days artillery preparation thundered among the hills. The Allies attacked the town from various angles and advanced patrols frequently got into the streets, but were, at first, unable to maintain their hold, so strongly was the town fortified.

During the first week in January troops succeeded in entering, and from that time onward fought their way from house to house. Much of the fighting was with hand-grenades. The converging columns gradually ousted the defenders from the greater part of the town and after a last desperate resistance in the north-western quarter, the whole place was cleared. The forces found themselves confronted by a steep valley commanded by a curiously-elongated hill known as La Chiaia which rises to a height of 1,300 ft. There were patches of wood in the valley which opens out towards the flat ground over which passes the main road and railway to Cassino. The Germans were holding the hill village of Cevarro (700 ft.) opposite the detached hill of Monte Trocchio. Beyond these positions lies Cassino, the enemy's main point guarding the road to Rome. The valley leading to Atina is indicated in the drawing. The road here leads into a tangle of mountains.

MOROCCAN "GOUMS" ARE NOW FIGHTING IN CENTRAL ITALY: AN ATTACK ON A FARM HELD BY THE GERMANS UP IN THE HILLS: The final rush with the bayonet by these staunch Colonial warriors—*Drawing by W. G. Whitaker*

The bearded French Moroccan troops, who entered the Italian battleline some little time ago, have already established themselves as doughty fighters against the Germans. Recently they hurled the enemy from two strongpoints in the 3,000-ft. snow-capped mountains on the right flank of the Fifth Army. One was a farm which the Germans had converted into a miniature fortress. It fell to the Moroccans after a struggle lasting for thirty hours. The farm stands on the bank of a river at the foot of a soaring mountain. The Moroccans attacked with great determination, but were beaten back as German reinforcements came up. But not for long. The Moroccans were back at dawn. They crawled forward to an assault position near the farm, then leaped yelling to their feet and stormed the building at the point of the bayonet. German prisoners told their captors that the presence of the Moroccans has caused a good deal of alarm among the troops facing them.

THE CONTINUED RAINS HOLD UP SUPPLIES TO THE FRONT IN THE EIGHTH ARMY SECTOR. THE RAPID RISE OF THE RIVERS CONTINUES TO HAMPER THE ALLIED FORCES. The big rubber pontoons over which the supply convoys pass are twisted and forced out of their position; and frequently they have to be removed and new ones placed in position—*Drawing by E. G. Lambert*

The heavy rains in the Apennine hills have continued to bring about rapid rises in the rivers, with the result that the biggest types of pontoon bridges have suffered to an extent which has made them unusable for three to four days at a time. It has been an anxious time for the Engineers responsible for the maintenance of communications. After a night of wind and rain it is frequently discovered that a main pontoon bridge has been seriously damaged: waiting lorries and tanks are held up on the banks as the damage is examined. Some of the central rubber pontoons may be twisted and torn from their positions; the neat orderly array of the pontoons is broken; snouts protrude in ugly bulges beneath the tracks which, although they hold, hourly exhibit a growing strain; cables from the sections near the shore are stretched. Badly damaged pontoons are extracted, when possible, from their positions under the tracks: these are usually double, with a space between. The rising floods may delay repairs for many desperate hours

DESOLATION ON THE ITALIAN BATTLEFIELD: THE INCREASING SEVERITY OF THE FIGHTING IN THIS AREA has led, in certain districts, to a repetition of scenes reminiscent of 1914-18 in France and Belgium—*Drawing by W. G. Whitaker*

War correspondents in Italy have recently been commenting on the physical aspect of certain areas of the Italian battlefront. In some places where the fighting has been especially severe there is an air of shell-torn desolation, where splintered trees and ruined husks of dwelling-houses alone meet the eye. In these places, the shell-craters lie thick—almost touching, in the old "pepper-pot" style of the Ypres-Menin Road. Around Ortona, for instance, there is complete desolation on the 1914-1918 scale, with the ground scarified and every tree and house blasted by the intense gunfire. The drawing reproduced here gives an impression of the scene as one approaches the captured town of Ortona from the notorious "Dead Man's Gulch," scene of the very heaviest fighting, which, with its craters, blasted trees and ruined buildings, resembles a scene from "Macbeth" rather than Italy in 1944

WARFARE BY ROCKET

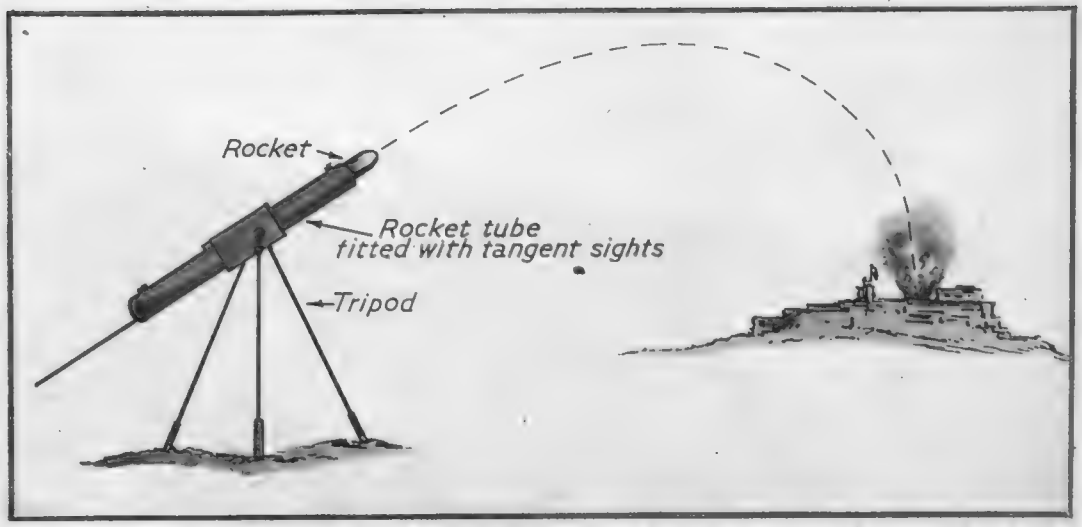
And Other Scientific Developments Brought About by Modern Warfare:

Illustrated by Sphere Artists

WAR is notoriously prolific of new inventions and improvements of old ones, the present conflict proving no exception. But to-day we are hearing more about a lethal device that, a few years ago, was deemed to have great potentialities. The rocket, as a kind of super-artillery, was then the subject of very hopeful experiment, particularly by the General Staffs of Germany and the United States.

There might be something funny about the very idea of a rocket, thanks to firework associations, but the underlying principle is so valuable that scientists cannot overlook it. This principle is that a projectile need not be *projected*, but can carry its own power. Thus (1) it might be possible to dispense with the expensive and cumbersome gun or bombing aircraft, and (2) it might be possible greatly to increase the range of warlike missiles.

These facts were first appreciated at the beginning of last century by a Lieut.-Colonel in the British Army named Sir William Congreve (1772-1828), who earned considerable fame and fortune as a result. He invented what became universally known as the Congreve Rocket, and this was used with highly-destructive effect in siege operations. (How many engines of war started thus!) But two developments quickly out-moded the device: first, the phenomenal improvement in artillery that occurred during the nineteenth century, and, second, the invention of the Whitehead torpedo.



THE ROCKET INVENTED BY SIR WILLIAM CONGREVE and used in an attempt to burn the French Fleet in the Basque Roads in 1809. This was a simple device, with an explosive in the head: the tube was fitted with tangent sights and the rocket was fired from a tripod. Its success was not great

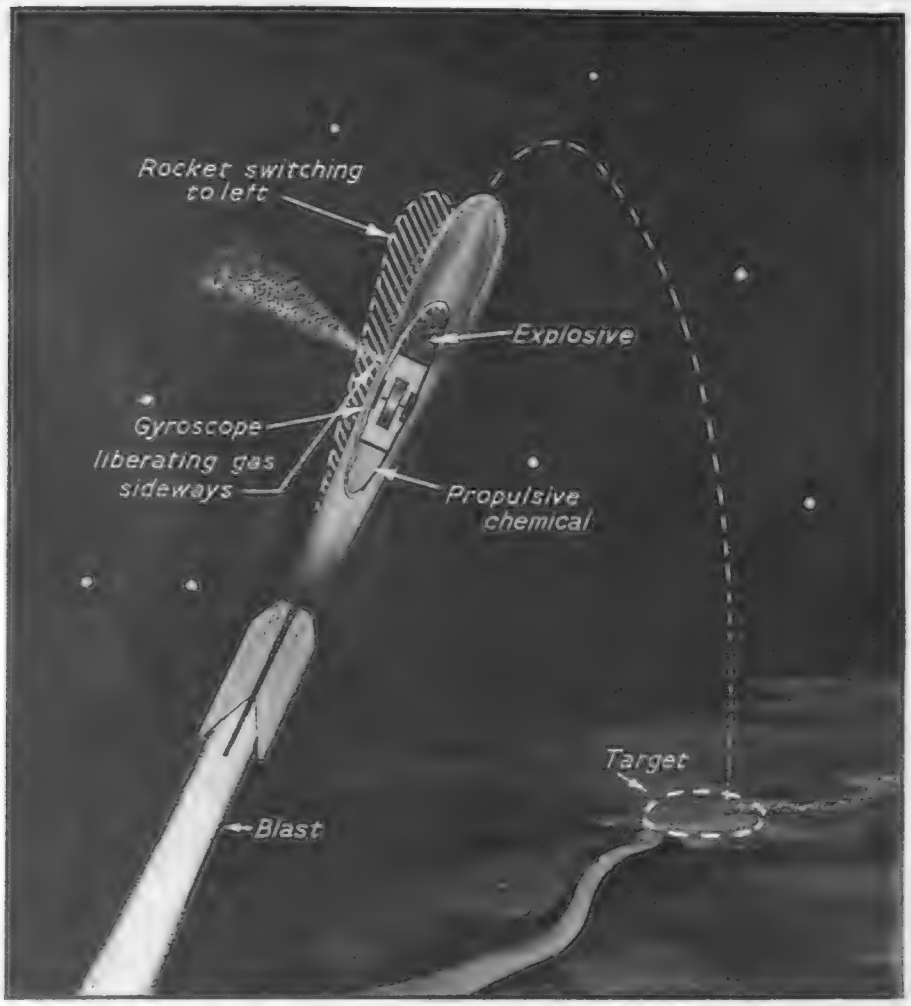
The torpedo seemed then to supersede the rocket entirely, for it worked on the same principle—that is, the principle of self-contained motive-power—and yet the mechanism could be regulated with so much more accuracy. Poor Congreve's device, faced by such competitors, degenerated into nothing better than an instrument of humanity and life-saving—for signalling distress, and, in the form of the famous Boxer's Life-Saving Rocket, for carrying lines from ship to shore.

But the underlying lethal possibility remained, and was carefully filed for future reference by the more enterprising General Staffs. Perhaps the fantastic fictions of Mr. H. G. Wells stimulated these, as they probably inspired some Continental and American scientists of our time to experiment with rocket-aircraft for reaching other worlds, and with rocket-propulsion for railway trains. The Germans had reached a stage with such experiments a few years ago when they could give a practical, if not entirely successful, demonstration of a "rocket-train." But it was the artillery expert whose progress was attended with the most interest. He reached this conclusion:

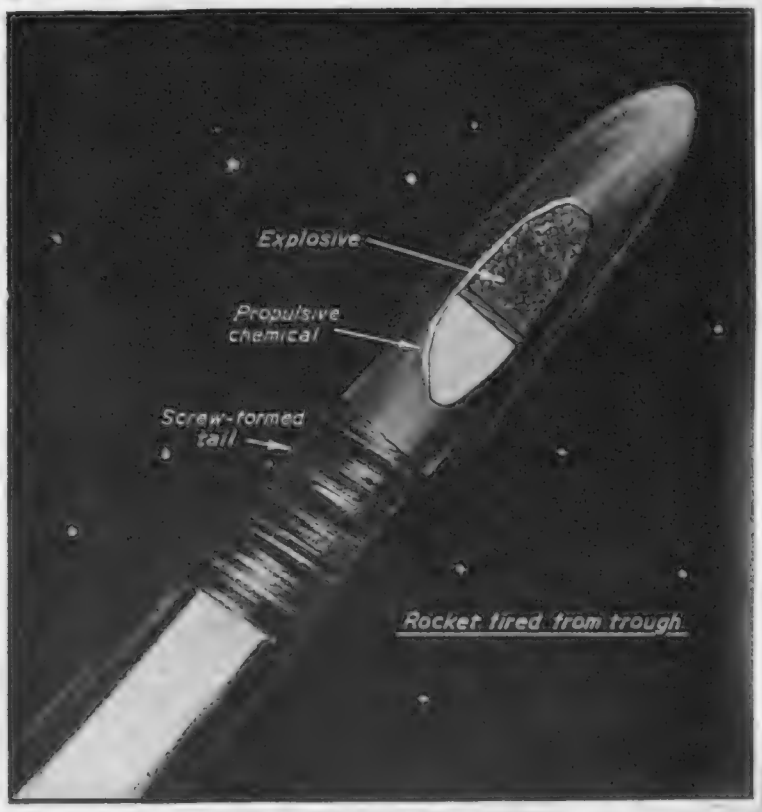
If only a rocket could be *controlled in flight*, it could be developed into the most effective form of artillery ever imagined; capable, at small expense, of plastering a target half-way round the world.

But how could a rocket be controlled and kept on a straight and accurate path?

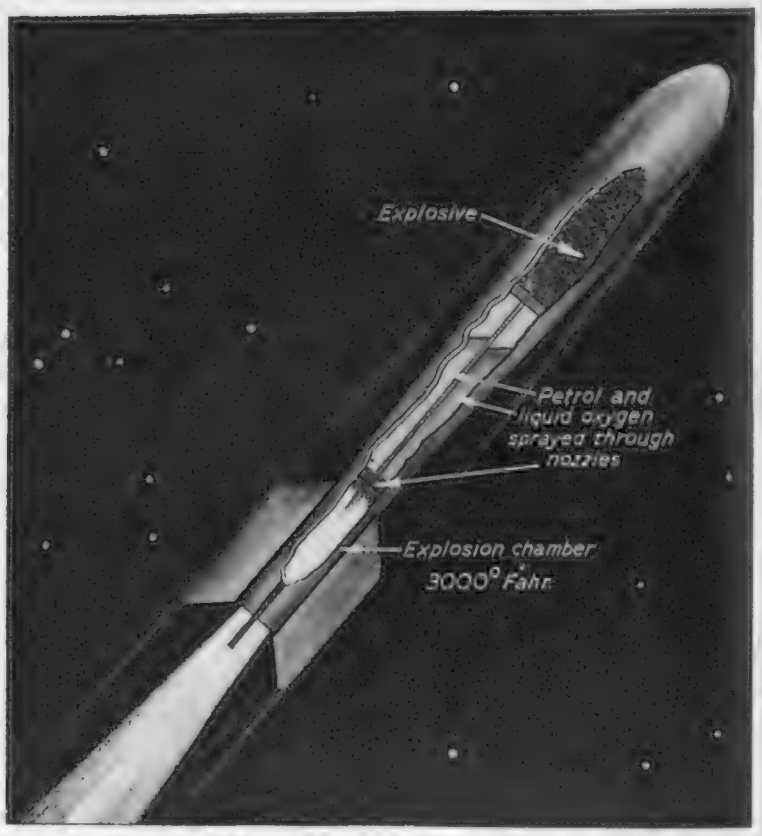
It may be fairly safe to say that so far no one has solved this problem. But that is not to suggest that the problem is not well on its way to being solved. We knew before this war started that foreign experts had made considerable progress with a most ingenious method of gyroscopic control of rockets. The gyroscope—fundamentally a weighted, spinning



GYROSCOPIC CONTROL IN A MODERN ROCKET: It has always proved difficult to aim a rocket with any exactitude owing to the tendency of the missile to swerve during flight. In modern rocket shells, therefore, gyroscopes have been fitted in an endeavour to secure a true line of flight—*Drawing by B. C. Wood*



THE HALE ROCKET WHICH SUPERSEDED THE CONGREVE: Two patterns of this were built—a 9-pounder and a 24-pounder, for field and fortress warfare respectively. They were fitted with a screw-formed tail in an endeavour to get truer flight



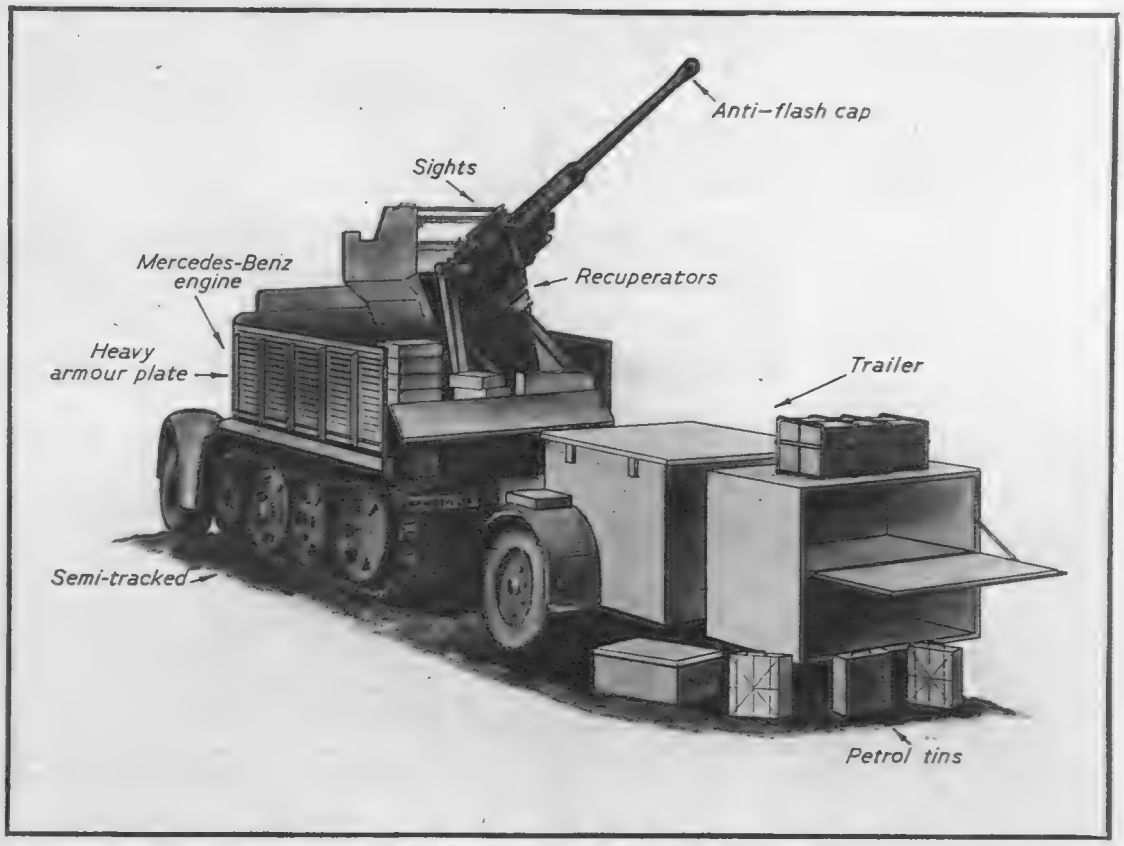
A GERMAN-BUILT ROCKET: Constructed by the engineer Nebel, petrol and liquid oxygen were used as propellants: these were fired in the explosion chamber at 3,000 deg. Fah.

wheel—is fixed inside the rocket and operates either metal vanes or gas-jets. The idea is that when the rocket is deflected from its path by wind or a sudden tendency on its own part to somersault and dive, the self-correcting gyroscope either moves the vanes or projects a stream of gas outwards at right-angles to the rocket, so that the missile is brought back to the proper track. It will be appreciated at once, however, that this would not necessarily be good enough. The rocket might be straightened-out again, but still it would have been deflected from its original course to a certain extent, and that would certainly mean that it would miss a precise target. On the other hand, it would not mean that it would miss a huge, sprawled target, such as London. So it *might* be possible for giant rockets to take their nerve-racking part in indiscriminate *day*-bombing.

We also know that the Germans have been experimenting with radio-control of such missiles. This might be a much more satisfactory method. And we have some information—all this was published before the war—about fuel-systems with which they have dabbled. Thus, experimental artillery rockets have been made with two chambers, one filled with petrol or alcohol, the other with liquid oxygen. Meeting in a special combustion chamber, these gases explode with a continuous "kick," producing a heat up to 3,000 deg. Fah.

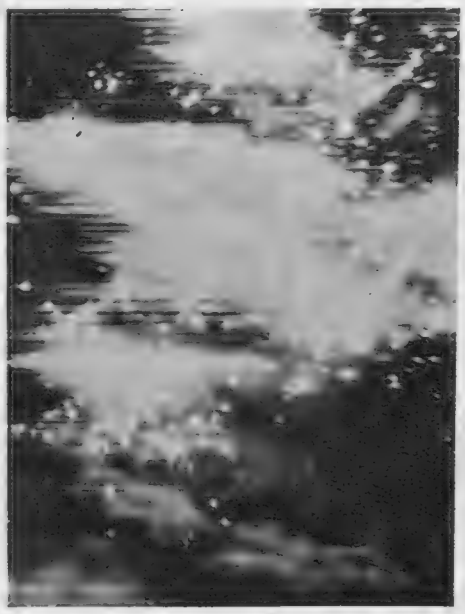
Rockets of this kind have been effective over a range of about thirty-five miles, but that could be multiplied considerably with increases in size, improvements in metal casing and with the use of new explosives.

It is believed that the anti-tank gun of the Russians known as "Katiushka," and the similar American weapon called "Bazooka," are designed on the rocket principle.



ENEMY MOBILITY IN THE FIELD: A useful item of German equipment—the mobile anti-aircraft gun and limber—*Drawing by B. C. Wood*

In order to bring an anti-aircraft barrage to bear where it is most needed, the Germans in Italy are making use of the weapon shown in detail above. The trailer-limber is built in two parts, on a base which runs on rubber wheels. Both petrol and ammunition are carried in this trailer: the gun itself is mounted on a tracked vehicle, powered by a big Mercedes-Benz engine and protected along its sides with heavy armour-plate. The specimen illustrated here was knocked out by naval gunners whilst it was operating against British landing-craft in Italy



TWO PICTURES TAKEN DURING THE STETTIN RAID on the night of January 5-6. The one on the left shows the great smoke-cloud covering the city during the latter stages of the attack: a Lancaster (seen in the left centre) is making its bombing run-up to the target. On the right is an impression of the industrial part of the port, studded with thousands of burning incendiaries, picking out the lines of the streets as the attack developed. At the top of the picture a great pall of smoke hangs over the burning town

ONE OF THE WEAPONS SHOWN IN THE DRAWING ABOVE, as it was seen after being knocked out by naval gunners supporting the operations of the Eighth Army in Italy

THE SIGNALS AND TELEPHONE VANS OF THE BRITISH ARMY: A mobile signal office and telephone concealed in a wood. Lines leading to the exchange are usually buried for safety and concealment, but in this case four field-cables have been laid in on poles: To meet the needs of swiftly-moving warfare, the Royal Corps of Signals have designed special mobile signals offices and telephone exchanges—"Terminal Equipment Vehicles." By this means, when battle headquarters moves to a new location, a Divisional Commander can communicate without delay with his staff and with the front line. Each vehicle has a switchboard, not less than twenty lines, and several instruments for Morse telegraphy, known as Fullerphones

THE EXTERIOR OF THE MOBILE DIVISIONAL SIGNALS OFFICE AND TELEPHONE EXCHANGE—or "Terminal Equipment Vehicle," as it is known to the Royal Corps of Signals who operate these specialised vans in the field

BROADCASTING ACROSS THE WHOLE WORLD

The All-round-the-clock Service Put Out by the B.B.C. on Its General Overseas Programmes Described by CHARLES GRAVES

A FEW days ago, a national daily newspaper came out with the flat-footed announcement that the B.B.C. Forces Programme was to be abandoned, and that its place alongside the existing Home Service would be taken shortly by the General Overseas Service. Other newspapers followed up this "revelation." The official reply, however, was: "The whole question of the B.B.C. programmes at home and overseas is under consideration."

Well, at least the attention of the public has been drawn to what is the longest continuous broadcasting service in the world, of which people in Great Britain have little or no knowledge. The G.O.S. works all round the clock, except for two hours and three-quarters between 7.15 a.m. and 10 a.m. G.M.T., hitting the target areas at the peak listening time. At 10 a.m. G.M.T. the programme is beamed at China, India and Western Australia. Beaming should, perhaps, be explained. It is not a narrow telephone circuit beam, but covers much of the earth's surface in the general direction in which it is aimed, and more people hear it on the outskirts than the B.B.C. engineers previously expected.

MISS BARBARA McFADYEAN, one of the announcers on the General Overseas Service

MISS JEAN METCALFE, most recent G.O.S. announcer

This programme, though aimed at China, India and Western Australia, is heard very well by our troops in Italy, North Africa and the Middle East, including Paiforce in Persia and Iraq. The audience problem is considerable. In India, for example, there is the Fourteenth Army, as well as exiled English civilians, and it is important to keep the troops in touch with home, of which later.

This programme continues until 1.30 p.m. G.M.T., and then proceeds for two hours to direct itself at the English civilian audience, which, naturally, has different tastes. At 4.30 p.m. the programme is beamed on Africa up to 11 p.m. for an audience consisting largely of the troops. The beam then is directed at the South Atlantic, Latin America and the Falklands. Here, again, specialised programmes are necessary for the different types of audience—the crews of ships at sea, exiled Englishmen and so on.

The beam now works its way up Central America, to North America, closing down at 7.15 a.m. If it continued for the next two and three hours, it would merely be hitting the North Pole, with no audience except Eskimos and men in Iceland. The latter are serviced, however, by the use of back radiation. This means that when the programmes are beamed on, let us say, Aden, and the aerial is not screened, Iceland can hear perfectly.

It will be seen that the primary duty of the General Overseas Service is to inform and entertain our troops as they are posted and find themselves overseas; incidentally, giving the same service to his Majesty's subjects who live permanently overseas. On the face of it, therefore, it would be perfectly logical if the Forces Programme were absorbed by G.O.S. In 1939, the B.B.C. decided, for its own good reasons, to merge all its Regional Services into the Home Service. Then, when the B.E.F. landed in France, an additional programme for them was designed to fit in with their daily life under the title of the Forces Programme. France, however, could be reached by medium waves, and so home listeners and troops in training in this country had the alternative programme, and continued to do so even after the fall of Dunkirk.

In the meantime, we had thousands of troops overseas who took part in the early campaigns of Abyssinia, Eritrea and North Africa, and by 1940 the B.B.C. realised that they needed special programmes. Fortunately, it was simple to arrange this through the Empire Service, which had been in existence for eight years. A few transmitters were available, and a technique was worked out so that a world-wide service could be broadcast in English (for much of the Empire Service had previously been in foreign languages). Into this programme were put special items like "Calling the British Forces in India," "Calling Gibraltar" and "Song-time in the Laager." Some of these were addressed to Anzacs who were out of range of the Empire Service to Australia and New Zealand; but as transmitters were so few, these programmes were fitted into, rather than added to, the Empire Service. It was not until 1942 that special transmitters and wavelengths were available for troops in the Middle East. When they were, the service became known as the Overseas Forces Programme. More transmitters now became available, and on the eve of Alamein the programme increased from two and a half hours to seven hours daily. By June 1943 the programme had increased to thirteen hours. It then changed its name to General Overseas Service, and now runs, as I have said before, twenty-one and three-quarter hours per day.

For the future, the extent and beaming of the programme depend on the course of the war. For the programme is primarily for the troops, who form a tremendous floating population all over the world, and has to adapt itself to campaigns everywhere. As it stands, there are four other broadcasting services in English—the Pacific, the Eastern, the African and the North American—with the result that the troops have the G.O.S. either as an alternative or as the only programme in English. But its programme directors have to bear in mind that a very high percentage of the listening is done in canteens. This means that there have to be more short news flashes for troops just coming into the room where the loudspeaker is installed. It also calls for more continuous music rather than the type of musical programme which is interrupted by dialogues or monologues.

In order to keep in touch with the reaction of the troops, there are special listening panels wherever large numbers of troops are stationed. In addition, there are two items, called respectively "Questions again" and "Thank You for Your Letters," which have rapidly become the most popular features of all. Three girl announcers—Barbara McFadyean, Joan Griffiths and Jean Metcalfe—received so many thousands of letters each week from the troops wanting to know about themselves and their day-to-day activities, as well as the simplest facts of life, such as whether there are still any motor-cars in London, that it was decided to answer them all over the radio, as well as by airgraph.

MISS JOAN GRIFFITHS, the announcer who has been presenting (with Miss McFadyean) a daily programme of gramophone records, "Forces' Favourites," for the British troops in the Middle East and North and West Africa

I have been looking at a number of letters which had come in a few minutes before my arrival at the B.B.C. The majority, of course, ask for favourite tunes, not to mention the photograph of their favourite announcer. In addition, they inquire their age and birthplace, their hobbies and everything else about them. Miss Metcalfe, for example, revealed the fact that she was born in Kingston, whereupon a bombardier in the Middle East points out that they are county neighbours, because he lives in Middlesex—"quite near Kingston, but on the other side of the Thames. I have been to Reigate several times during my keen cycling days," he writes. A leading telegraphist in the R.N. writes to Joan Griffiths to say that he lived in Punch Bowl Lane, Dorking, in peacetime, and wonders what it looks like now. He, incidentally, had received a photograph from Miss Griffiths, and comments: "I must confess it is rather different from what I had expected. I have often imagined yours to be the dark type of beauty, but I must admit you are very pretty and do not look anywhere near your age. (I really mean that, too, and am not saying it just as an empty compliment). In fact, if ever I meet you, I shall claim a kiss, so that I can say I have been kissed by one of the very, very few Forces Sweethearts. You say in your letter that you now have your hair cut short. Would it be asking too much if I ask for another photograph of you, as I should say you would look even better, or rather prettier, with it that way?"

A leading aircraftman apologises, in a letter to Barbara McFadyean, for his handwriting, but explains that he is writing on a bomb fin for a table and a petrol-tin as a chair, while he asks if she will tell him her age—to settle a bet, or so he says. A gunner asks Miss Metcalfe what sort of jokes she enjoys. "What I mean," he asks, "is whether you laugh at these long-winded, pointless jokes, or do you prefer the custard-tart slinging type of humour? I laugh a lot about the former kind of jokes, but I meet with a cold silence everywhere when I retell them."

Some of the troops sent their photographs; some send bits of local flora. One of the girl announcers received the wings cut off a dead German pilot's tunic.

Whether this mass of correspondence is a reflection on the idleness of their relatives in writing to them, one does not know. It is possible that they have neither seen nor heard of their relations for so long that the voice of someone whom they know is speaking at that moment from England is more vivid than a letter written by their families which takes months to arrive.

Until the B.B.C. makes a further pronouncement on the suggestion that the General Overseas Service will absorb the Forces Programme, it is worth speculating on the prospects of success that such a scheme would have. To begin with, it would be excellent for the troops overseas to realise that their relatives in England are listening simultaneously to the same programme. This would be a real link. On the other hand, it is highly improbable that what pleases a sergeant sitting on a petrol-tin in the Middle East would be equally attractive to a man in Ipswich sitting in a pub. In which event, would the programme directors decide to please the man in the Middle East at the cost of boring the man in Ipswich, or vice versa? In any event, the programme was originally built up successfully by producing specialised programmes for specialised audiences—as, indeed, it still does.

If there is to be a general service for all, it looks as though the old idea will have to be scrapped.

A third point that occurs to one is why there is any reason for the B.B.C. to consider the idea of absorbing the Forces Programme into G.O.S. This is, of course, begging the question, but one can scarcely believe that the *Daily Express* made the announcement without some basis of fact. On the face of it, a good reason could be that the B.B.C. realises its dilemma after the war. At the moment it is being subsidised to the tune of £10,000,000 by the Treasury, and if television is extended after the war, still more money will be required. This would put the B.B.C. still more firmly under the power of the Treasury, unless it took the plunge in the direction of commercial radio.

All this is pure speculation, but in case there is any possibility that there may be even a partial amalgamation of the two programmes, it might be worth naming some of the main features in the General Overseas Service. The best has been "Radio Newsreel," which gives a fast-moving background to the day's news for a quarter of an hour—bringing to the microphone the actual voices of those who have good stories to tell from every war front; extracts from leading speeches; and brief explanations of the facts behind the day's newsreel. Others are "Regimental Salute," "Tommy Handley's Half-Hour," "Out of the Ditty Box," "Home Flash" (which is very popular and gives local news of some locality in Great Britain, with a local compère and music supplied by the local band), "Forces Prom," "World Affairs" by Wickham Steed, together with books, plays and films, and "Forces' Favourites."

The fact that goods made of raw materials in short supply owing to war conditions are advertised in this publication should not be taken as an indication that they are necessarily available for export

FOREIGN NEWS ITEMS IN PICTURES

THE FUNERAL PROCESSION OF ARCHBISHOP GARUANA OF MALTA. The body of Monsignor Sir Maurus Garuana, Archbishop of Malta, lying in state in the Bishop's Palace. Members of the Royal Malta Artillery are guarding the catafalque. His Grace the late Mgr. Sir Maurus Garuana, Archbishop of Malta, died on the morning of December 18. Later his body lay in State in the Bishop's Palace at Valetta. On December 21 an official cortege took the body of the Archbishop to St. John's Cathedral, Valetta, from where the funeral took place. The procession was attended by the Governor, Field-Marshal Lord Gort, V.C., G.O.C. Malta; Admiral Hamilton, Vice-Admiral Malta; Group Captain Hicks, R.A.F.; and many clerical and civic dignitaries

PART OF THE FUNERAL PROCESSION passing along Kingsway, Valetta, on the way to St. John's Cathedral

THE LEADERS OF THE POLISH FORCES study the new frontier line suggested by Moscow. This group of Polish leaders in London are studying the "Curzon Line," which Moscow has suggested should be the post-war frontier between Russia and the new Poland. The men seen in this picture are—in front, from left to right: Colonel Stanislaw Szurlej, head of the Service of Military Justice; General Stanislaw Kopanski, Chief of Staff; General Kazimierz Sosnkowski, Commander-in-Chief; and Colonel Stanislaw Karpinski, Deputy Inspector-General of the Polish Air Force. Behind are: Major Michal Miszke, aide-de-camp to General Sosnkowski; Vice-Admiral Jerzy Swirski, Commander of the Polish Navy; and Lieutenant Witold Babinski, aide-de-camp to General Sosnkowski

THE NEW SWISS PRESIDENT: Dr. Walter Stampfli (second from right) after his election at Geneva. Dr. Stampfli has been a member of the Federal Government since 1940: he belongs to the Radical Party. For several years he was a journalist, and then became the director of important metal works. He comes from a peasant family and holds the degree of Doctor of Political Economy. In the above picture he has just been handed a bouquet by a young girl from his own Canton of Solothurn dressed in the local costume

COLONEL OLIVER STANLEY IN NIGERIA. The Secretary of State for the Colonies has just completed an extensive tour through British West Africa. This picture was taken at the Pagan Mines, a few miles from Jos, in Plateau Province, where all the work is manual. Colonel Stanley (on the right of the helmeted group) is watching manual drilling in progress: the Africans are standing upon the platform end of the drill, their weight forcing it into the ground

LORD SWINTON HOLDS A GROUND-NUT CONFERENCE at Kano, in Northern Nigeria. In April 1943, Lord Swinton, Resident Minister in West Africa, received from the Emirs of Northern Nigeria a pledge that more ground-nuts would be planted this year than ever before. A call had come from Britain to West Africa for a record quantity of both ground-nuts and palm kernels, which are needed to make margarine, soap, glycerine and cattle-cake. The Emirs kept their promise, and, as the rains have been up to expectation, there is now every prospect of a record harvest. Recently, Lord Swinton went again to Northern Nigeria to meet the chiefs and see what had been achieved, and to discuss marketing arrangements and other problems. In the picture above, Lord Swinton is discussing affairs with the Emir of Kano and his Councillors in the private compound of the Gidan Seriki (the Emir's Palace), at Kano. Seated on left is the Emir of Kano. Second left, facing camera, is the Resident of Kano, Commander J. H. Carrow, Officer-in-Charge of the Groundnut Campaign; third left is Lord Swinton; seated with backs to camera are the Emir of Kano's advisers

A Page from Nature

The DEBRIS of EVOLUTION

The Recent Falls of Two Meteorites—Described and Illustrated

ON the night of October 9, 1943, a party of South African officers on the desert road from Khatatba to Wadi Natrun saw a bright light which filled the sky, and then a ball of fire the colour of molten steel "coming straight at them." Next came an explosion (not very loud, they say) and the sound of fragments falling around them in the darkness. The same sequence of events, though on a larger scale, was reported from the United States some seven weeks later. On November 26, at 7.45 p.m., a brilliant streak of white light with a red pinhead point was visible for more than a minute in the sky over Texas and about 600 miles northward. Then came an explosion and a fifteen-seconds tremor, suggesting that the earth had been struck by some heavy object. Next day, said the reports, on a farm just over a mile from the town of Thomas, Oklahoma, newspaper men were investigating "an unexplained crater."

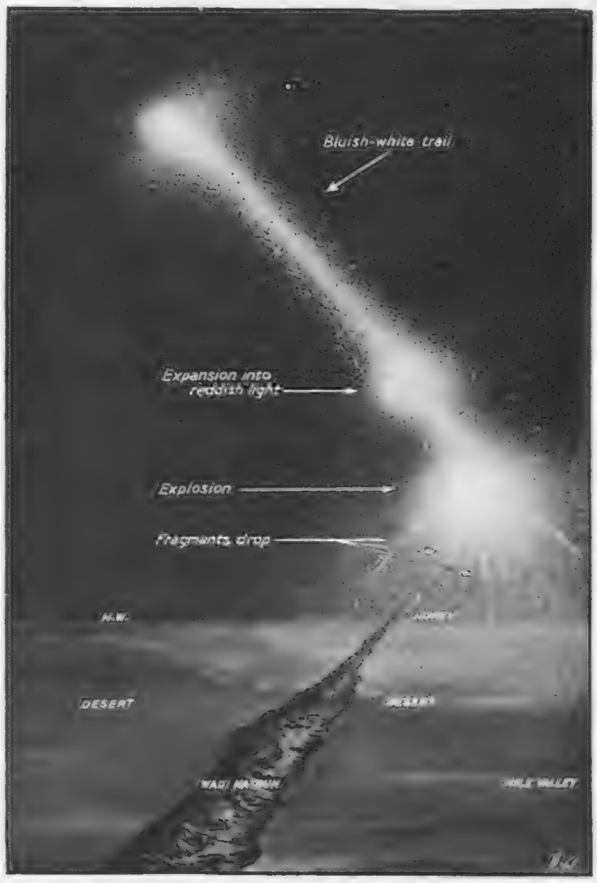
Presumably it was a small one. In Arizona, twenty miles west of Winslow, there is a crater four-fifths of a mile in diameter and 570 ft. deep, which any prehistoric nomads who survived its formation must have had similar difficulty in explaining. In fact, the accepted explanation of all these phenomena, and of a vast number of comparable happenings (the earliest records of which, in classical Chinese literature, date from 700 B.C.), is that they result from the entry into the earth's atmosphere of meteorites—chance masses of matter, either from planetary regions or from outer space, which though once, very reasonably, considered to be the "thunderbolts of Zeus," are now described as "the debris of evolution."

To explain the existence of this debris involves the whole theory of how planets, moons and asteroids are formed. Since the stone we throw into the air returns to earth, we tend to consider gravitation as a force which holds things together, whereas in practice it frequently tears them apart. Every large mass in the universe has what Sir James Jeans has described as a danger zone around it. Smaller bodies entering this area will probably be disintegrated by the gravitational field. Our sun once got into the danger zone of some star of far greater mass, and the planets which now revolve round it were the result. These, in turn, were similarly broken, the satellites we know as moons being torn from the parent mass. The three flat circular rings to be seen round Saturn are almost certainly the remains of a tenth moon which broke up into millions of fragments; and in the wide gap between Mars and Jupiter are found the asteroids, debris of a planet destroyed in all probability when drawn into Jupiter's danger zone. The fragments of Saturn's tenth moon continue to follow circular paths around the planet, and the asteroids in similar fashion whirl through space around our sun. Clearly, small bodies moving in swarms have not the same stability of course as that shown by planets and moons, and the smaller they are, the more likely they are to be detached violently from the swarm. Sometimes the resultant of the forces they encounter gives them a definite orbit—comets, for instance, have well-defined though immensely elongated elliptical paths; but often the planetary debris follows no easily calculable course. When comets eventually disintegrate a shower of small bodies results. If the earth passes through such a shower, the friction of the atmosphere raises the fragments to white heat. Thus, though few of them are more than a tenth of an inch in diameter, they blaze with light, appearing far larger than they really are. We then speak of them as meteors, or shooting stars.

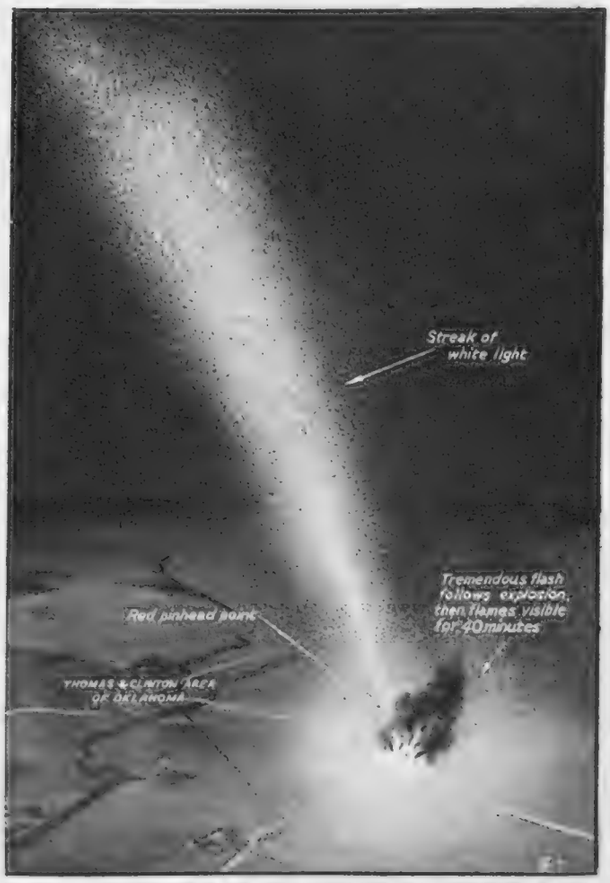
Meteorites are bigger. Though the same gravitational interplay must obviously govern their formation, the actual details of the process remain less certain. Strangely enough, *there is hardly a single authenticated case of a meteorite falling during a meteor shower*, and it is significant that their observed speeds often exclude altogether the possibility of planetary origin.

The pull of the earth catches them as they journey in space, and they swing towards us. During the last stage of their flight, that shallow curve through the 200-mile belt of atmosphere, they burn fiercely, usually dwindling so fast that in striking the earth they cause little damage. Though the meteorite responsible for the Arizona crater was the size of a small mountain, so that its impact, white hot, upon an inhabited area would have been an appalling catastrophe, a smashed roof is the usual extent of the trouble.

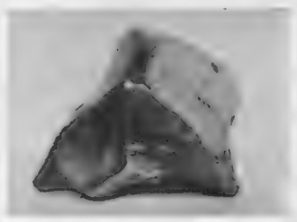
The presence of free iron is the main difference between metoerites and mineral masses found on earth. For the rest, analysis shows a varying composition, iron, oxygen, silicon, magnesium and nickel being typical constituents, with potassium, cobalt, chromium, hydrogen and chlorine (among others) in lesser amount. Black diamond-hard formations are rare, carbon, when present, taking usually the more prosaic form of graphite. In short, these masses may come from outer space, but they contain no unfamiliar element.



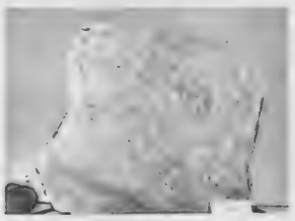
AN IMPRESSION OF THE FALL OF A METEORITE in Northern Egypt in the vicinity of the Wadi Natrun on the night of October 9, 1943



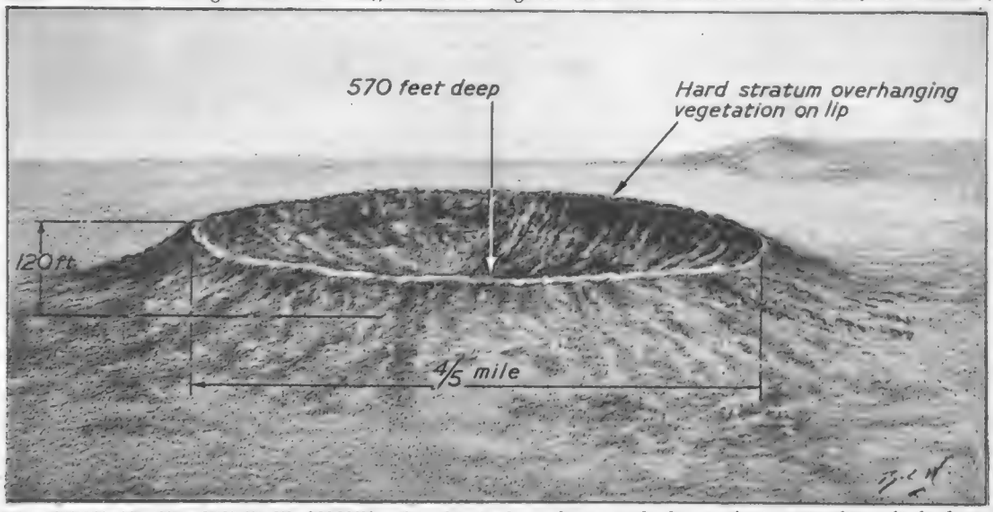
A DIAGRAMMATIC VIEW OF THE FALL OF A METEORITE in the Southern United States on November 26, 1943, as observed by eye-witnesses—*Two drawings by B. C. Wood*



THE ROWTON METEORIC IRON OR SIDERITE: This was seen to fall at Rowton, near Wellington, in Shropshire, on April 20, 1876. Siderites usually consist of 80 to 95 per cent. of iron and 6 to 10 per cent. of nickel. This siderite is six inches wide



HOW TO TELL A REAL METEORITE: This iron from Mexico (about 12 ins. wide) has been polished and subjected to the action of acids, producing these "Widmanstatten" figures. The bright edge has not been etched by the acid. This is an excellent method of testing the genuineness of meteorites, as forgeries are not unknown. Both these meteorites are to be seen at the Natural History Museum at South Kensington



THE FAMOUS METEOR CRATER IN ARIZONA, thought to have been made by a giant meteorite: it is four-fifths of a mile wide, and 570 ft. deep—*Drawing by B. C. Wood*

This crater is a basin-shaped depression: the crater slopes rise gently from the surrounding desert plain to a height of 130 to 160 ft. at the rim, while the inner slopes are steep and precipitous, and partly covered with talus. The bottom is level (410 ft. below the plain) with an area of over 300 acres, and was once occupied by a lake, as is shown by the presence of deposits up to 88 ft. in thickness. The outer slopes are covered pell-mell with fragmentary material ranging in size from blocks of rock estimated to weigh over 4,000 tons down to the finest "rock-flour." Fragments are littered about for a distance of six miles from the centre, and they were evidently ejected from the crater, the largest blocks being nearest the rim. Indiscriminately mixed with this material, and also buried in it, have been found thousands of pieces of laminated iron-shale resulting from the weathering of the iron. It is obvious that this meteoric material must have been ejected from the crater at the same time as the blocks of sandstone and limestone

ITEMS OF HOME INTEREST

AN A.T.S. WEDDING-DRESS POOL : The scene at a London Depot as the girls are shown some of the dresses which they may use free of charge : A pool of wedding-dresses has just been set up by the War Office, for the use of girls in the A.T.S. who are about to marry, and who do not wish to go to the expense of buying special wedding clothes. The girls apply to their Company Commanders for permission to use these wedding gowns. By introducing this idea, the A.T.S. have now fallen into line with the W.R.N.S. and the W.A.A.F., both of whom have their own arrangements for loaning gowns

FOR SERVICE GIRL BRIDES : One of the wedding-dresses being displayed at an A.T.S. depot in London

GLAMOUR IN THE DANGER AREAS. Before undertaking their dangerous tasks, the girls apply vanishing cream to their faces and rub a special cream into their hands. These prevent the skin from absorbing explosive powders. The "Beauty Parlour" holds enough tables and mirrors to allow all the girls in the shift to make-up in a few minutes. Special attention is devoted to the girls who handle high explosives in Britain's munition factories, filling bullets, shells and bombs. Dust and grit must be kept out of the danger areas in which they work, as any abrasive might cause a spark. Only twenty minutes elapses between the arrival of the girls at the factory and their complete transformation into spruce magazine suits, with red turbans and brown, rubber-soled shoes

A WAR FACTORY STAFFED ENTIRELY BY MEN AND WOMEN VOLUNTEERS : On the left is Mrs. A. Goodhart, wife of Professor A. L. Goodhart, of Oxford University : on the right is Mrs. P. Harding, daughter of Lady Ribblesdale. Both are seen at work in a factory engaged on Ministry of Aircraft Production contracts, where many of the volunteer employees come from "Society circles." Colonel the Hon. Edward Coke (son of the 2nd Earl of Leicester) is production manager : the factory which he runs is the only one in England where the workers come and go as they please. Some work for an hour, some for a day. Everyone signs the register on arrival and departure : the rates of pay vary from one shilling to one shilling and twopence an hour

THE SECOND FRONT. ARMIES WILL TAKE THEIR OWN RAILWAY EQUIPMENT WITH THEM : When the Allies invade the Continent they will take their own equipment with them. Knowing that the Germans will destroy every bit of rolling-stock which they cannot get away, the Allies have planned their own supplies down to the last detail. Working twenty-four hours a day, ex-American railroad men, aided by British troops, will have assembled thousands of tons of new rolling-stock by the time the invasion date arrives. Not less than fifty miles of rolling-stock will be ready on that day. The Americans are now assembling pre-fabricated box cars at the rate of one an hour

TRAINING ARMY BLACKSMITHS AND METAL WORKERS in a London school : A general view of a course in progress, with Canadian and American soldiers taking part. In the year 1894, the great City Guilds—Carpenters, Armourers, Pewterers, Bricklayers and Wheelwrights—founded the Trades Training School in Great Titchfield Street. The intention was to offer training by night classes to boys and young men employed in workshops and factories during the day. When the war came in 1939, the School was not being used : the Carpenters (as the senior Company) offered the whole organisation, with such staff as could be retained and with all tools and equipment, to the War Office. The offer was immediately accepted. Up to the end of the first four years of the war, over 3,000 soldiers had already been trained there

The World of Books—By Vernon Fane

ADVENTUROUS LIVES in FACT and FICTION

Alaskan Doctor; Air Force and Merchant Service; Crime in New York and Murder at West Nattering; Mr. Cecil Lewis's New Novel

FOR an autobiography that combines adventure, realism, medical experience and a range of territory from Cuba to Alaska, let me recommend you to Dr. Harry de Vighne's book, **THE TIME OF MY LIFE** (Robert Hale. 10s. 6d.). Dr. de Vighne was an orphaned Cuban child, whose first memories were of selling newspapers in the Bowery. After that he became successively foster-son to an Iowa farmer, protégé of a great St. Louis doctor, sailor in a cargo-ship bearing arms to Cuba at the outbreak of the Spanish-American war, medical student in Texas, California and Oregon, and, finally, Health Commissioner in Alaska.

At that time Alaska was known as "the last frontier," and Dr. de Vighne's first assignment there was paid at the rate of about £36 a month and travelling expenses. Although he became the most famous doctor in the whole of that territory, Dr. de Vighne's reminiscences go back to the time when the capital city of Juneau was a small and ugly mining camp, when delicate operations had to be performed under the most primitive conditions and when epidemics of typhoid, scarlet fever and diphtheria had to be fought with anti-toxins from village to village. Although he made earnest efforts to avoid obstetrics, he had delivered his 999th baby by the spring of 1920, and by the middle of 1933 he delivered his 2,000th, which was immediately, and rightly, named after him.

When Dr. de Vighne found that he was the oldest doctor in the territory but one, he typically had no thoughts of retiring, but when the Alaskan sleet began to turn to snow one winter, he moved to California to "hang out a new sign and again feel the thrill of greeting that first new patient whose troubles were unknown to me, and, therefore, more stimulating." And that word is perhaps the best with which to describe these memoirs.

Mr. Cecil Lewis's new novel is a realistic and sober account of the lives of the officers and crew of a Wellington bomber lost in the North Sea. They are introduced to the reader as they take off on what is to prove their last flight, and the book then, as it were, falls into sections, each of which deals with the life of one of the doomed men.

PATHFINDERS (Peter Davies. 9s. 6d.) has characterisation as its best point. The men seem real; their tales are convincing. What is lacking is any coherent theme other than the chance that brings them together for a last journey. There is Thornly, the Commander, an idealist who has always refused to be pigeon-holed into the ruling-class post, expected from his Winchester and Balliol education; Morelli, the second pilot, an American of Italian extraction, young, good-looking and happy-natured. There is Dollar, a Canadian, once the black sheep of his family, and now an efficient front-gunner, and Cockney Nobby, the rear-gunner.

There is Lukin, the wireless operator, who is Jewish and was a successful journalist before joining up. And there is Cookson, the navigator from New Zealand, reliable and conscientious. For a few hours they fly and fight together, and then die together, but their lives have been too separate and remain too unrelated to each other in the telling to make this a wholly successful novel.

SAVE ALL YOUR WASTE PAPER FOR SALVAGE

DEATH OF A SABOTEUR (Collins. 8s. 6d.) is exactly the type of book its title implies, and comes to us from America. Mr. Hulbert Footner has written a brisk and lively story which moves from New York to San Francisco, with a few side excursions to Chicago, Detroit and the Brooklyn Navy Yard, and which fairly crackles with topicality.

Mr. Amos Lee Mappin was a round and cherubic gentleman, with some of the physical attributes, but none of the divine gullibility, of Mr. Pickwick. He was, in fact, a great help to the Federal Bureau of Investigation, and to him the entry of the United States into the war meant an intensification of work. Not that the little man showed it in his everyday habits. On the contrary, while the great majority of citizens grew more serious-minded, Mr. Mappin seemed daily to grow more frivolous.

His advent to night-clubs and fashionable restaurants might, of course, have coincided with his meetings with the Caucasian Prince Lenkoran, rich, a *bon viveur* and reputedly a successful collector for the Russian Relief charities. The F.B.I. might have been interested in the Prince, and there might, of course, have been something in all this giving of exquisite small dinner-parties and this leaning against all the best bars in East Fifty-Third Street.

For the most part this is exciting stuff, moving at a great pace, and not exceeding the possibilities of real-life investigation into German sabotage. There are times when the author is hard put to cap his own series of climaxes, but he does his creditable best, and this definitely is not one of those American thrillers that really need their own glossary of slang. Mr. Footner writes a clear and unhysterical prose, and manages to make his effects without too many tricks, either of phrase or invention.

Mr. James Hanley, in his new novel, tells the life-story of Manion, a sailor—a fictional biography of the kind best suited to this author. **SAILOR'S SONG** (Nicolson and Watson. 8s. 6d.) is a very simple and rather bald story; the whole force of the book lies in the author's attack and style.

Manion is wrecked at sea in the present war, and while he is lying injured on a raft, his story is told through the memories that haunt him in his delirium. He remembers, sometimes hazily and sometimes vividly, his adventures in the Merchant Navy in the last war, and the hard training that had preceded them when he served in many types of ship. He recalls the terrible years of the depression after that war, and what he and his wife Sheila suffered when there were no ships sailing, and no work to be had anywhere.

The raft on which Manion is lying is finally picked up, and he lives on; his friends had saved his life by keeping him warm through the long hours of his delirium. During his absence his daughter has died and his son has been drowned at sea, but his wife Sheila is there for him to go back to, and in his own words, "If you don't sail away, then how can you sail home?"

Mr. Hanley in this book attempts a certain lyricism that is not entirely successful. He is luckier with the impressions of feverish dreams and fancies, which, paradoxically, have some reality.

ALL FALL DOWN (Crime Club. 8s. 6d.) is the first detective novel of Mr. L. A. G. Strong's that I have read and, as far as I know, the first he has written, though it is natural enough that he betrays nothing of the novice in his writing. At any rate, he has a fine grasp of what are the essentials for this type of literature: a murder or two with tolerably grisly details, a detective who is a "character," and a police-sergeant or inspector of misleading bluffness and simplicity, a lady or two in distress, and a handful of thoroughly disagreeable folk, any of whom one could see convicted of murder with the greatest equanimity.

The murder or murders here take place in a village with the admirable name of West Nattering, which could be a pseudonym for so many places we all know. Ellis McKay, of Scotland Yard, visits this Devonshire Arcadia with his bookseller friend Gilkison for a few days' holiday, and, that being the way with sleuths and busmen, immediately finds more work of his own particular kind to do.

Neither Gilkison nor McKay have been, so to speak, Natterers for twenty-four hours before old Baildon is found dead under an avalanche of first editions (mint condition), and, to the fury of the irascible local doctor, McKay decides that an inquest is necessary. The suspects are—who? The two cowed and intimidated women who have suffered from the old miser's foibles for so many years? The brisk and oppressively righteous school-teacher, or his plaintive invalid wife? One of the village worthies, all of whom seemed to find Baildon's death a good riddance? The schoolmistress who delights in writing passionate and possessive letters to all and sundry?

Naturally, it is left to Inspector McKay to solve the mystery to the further honour of Scotland Yard in fact and fiction, and, naturally, he gets a certain amount of help and the necessary comic relief from the egregious Gilkison. It was equally to be expected that here would be a book written with more than the usual regard for style, for psychology (even as exemplified by murderers), and for the demands of adult readers.

A NEW JOB FOR A WOMAN: Charcoal-burning at Caterham, in Surrey. This is not a game with an outsize in hoops. It is Miss Kathleen Edwards rolling one of the sections of a charcoal-burning kiln in position—part of her daily work. Miss Edwards is nineteen years of age: when she sets out each morning from her home at Loampit Cottage, Caterham, in Surrey, it is to do a job which, until recently, was carried out only by skilled and experienced woodsmen. Of slender appearance, she heaves logs weighing 30 to 40 lb. with ease, and places them under the sawmill, which cuts the wood for the kiln in which it is turned into charcoal. Miss Edwards takes off the top two rims and gets inside the kiln—a dirty job—to prepare it for charcoal-burning

AFTER THE WOOD HAS BURNED, Miss K. Edwards removes the chimney from the kiln before clamping down

A TIME CHECK ON SERMONS IN THE OLDEN DAYS: Americans who are interested in our history and old-time customs—as, indeed, most of them are—are finding a good hunting-ground in the old Cotswold villages. In this picture, the Vicar of Shipton Cliffe, near Cheltenham, is explaining the use of the old sand hour-glass fixed beside the pulpit in his church which dates back to the thirteenth century: it was used to time the preacher's sermons. The vicar is the Rev. G. R. Hughes: the corporal in the pulpit is a namesake—Corporal Harvey H. Hughes, of Illinois

The Shaftesbury Homes and "Arethusa" Training Ship

In addition to general education and seamanship instruction, the *Arethusa* boys are given a good grounding in First Aid, which has been most useful to many of them now on Active Service. Please help this Society. 164, Shaftesbury Avenue, London, W.C.2.

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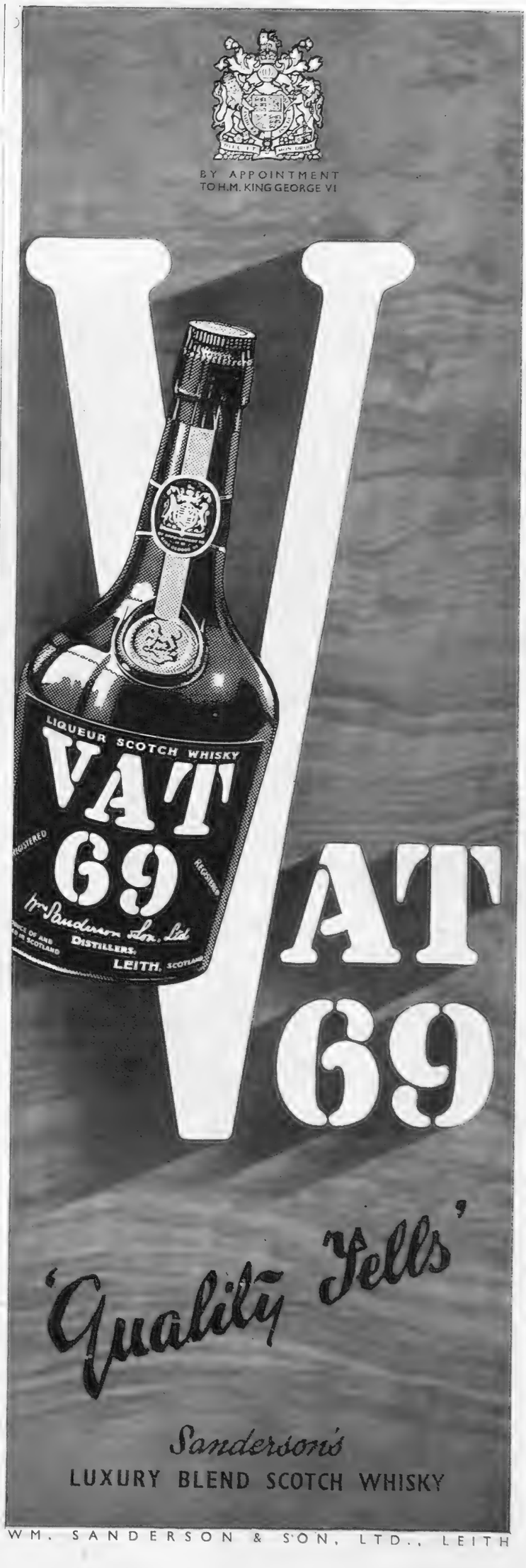

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